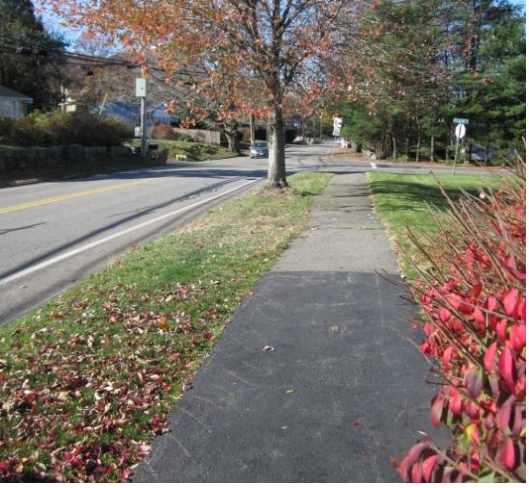

Existing Conditions - Technical Memorandum 1

South Lexington Transportation Study

Lexington, Massachusetts

Engineering and Planning Departments


ENGINEERS FST Since 1914

FAY, SPOFFORD & THORNDIKE

With RKG Associates, Inc.

January 2015

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1. INTRODUCTION

1.1 OVERVIEW

The Town of Lexington retained Fay, Spofford & Thorndike, LLC, and (FST) to conduct a South Lexington Transportation Study. Figure 1 identifies the South Lexington Study Area boundaries and the 15 intersections where traffic counts were performed, two of which were added at the kick-off meeting. Figure 2 identifies existing and permitted development sites along the Spring Street and Hayden Streets. Sites with continued potential for development growth are highlighted. The basis of Figure 2 is detailed in Section 2.6 of this Technical Memorandum.

Within this study area, the following arterials and collectors carry the bulk of vehicular traffic:

- Waltham Street, from Brookhaven to Marrett Road (Route 2A);
- Marrett Road (Route 2A), from Waltham Street to Lincoln Street/School Street
- Spring Street, from Concord Ave to Marrett Road (Route 2A);
- Concord Ave, from Spring Street to Waltham Street;
- Hayden Ave, from Spring Street to Waltham Street;
- Lincoln Street, from Marrett Road (Route 2A) to Middle Street.

Residents, however, are being subjected to neighborhood cut-through traffic at times when the arterial and collector system operate at or approaching congested conditions.

This Study examines the cumulative impacts of the Hayden/Spring Streets development potential during the next 10 years. Hayden/Spring Streetscommercial areas that have already largely been constructed and occupied.

Originally, this Study was to examine *both* moderate and high build-outs of the corridor. However, upon evaluating the impacts of the 'moderate' build-out, the traffic operations worse than levels of service (LOS) A-D are projected at several study area intersections. Some of the intersections in question do not have the environmental/physical flexibility to accommodate any levels better than LOS E/F during peak hours.

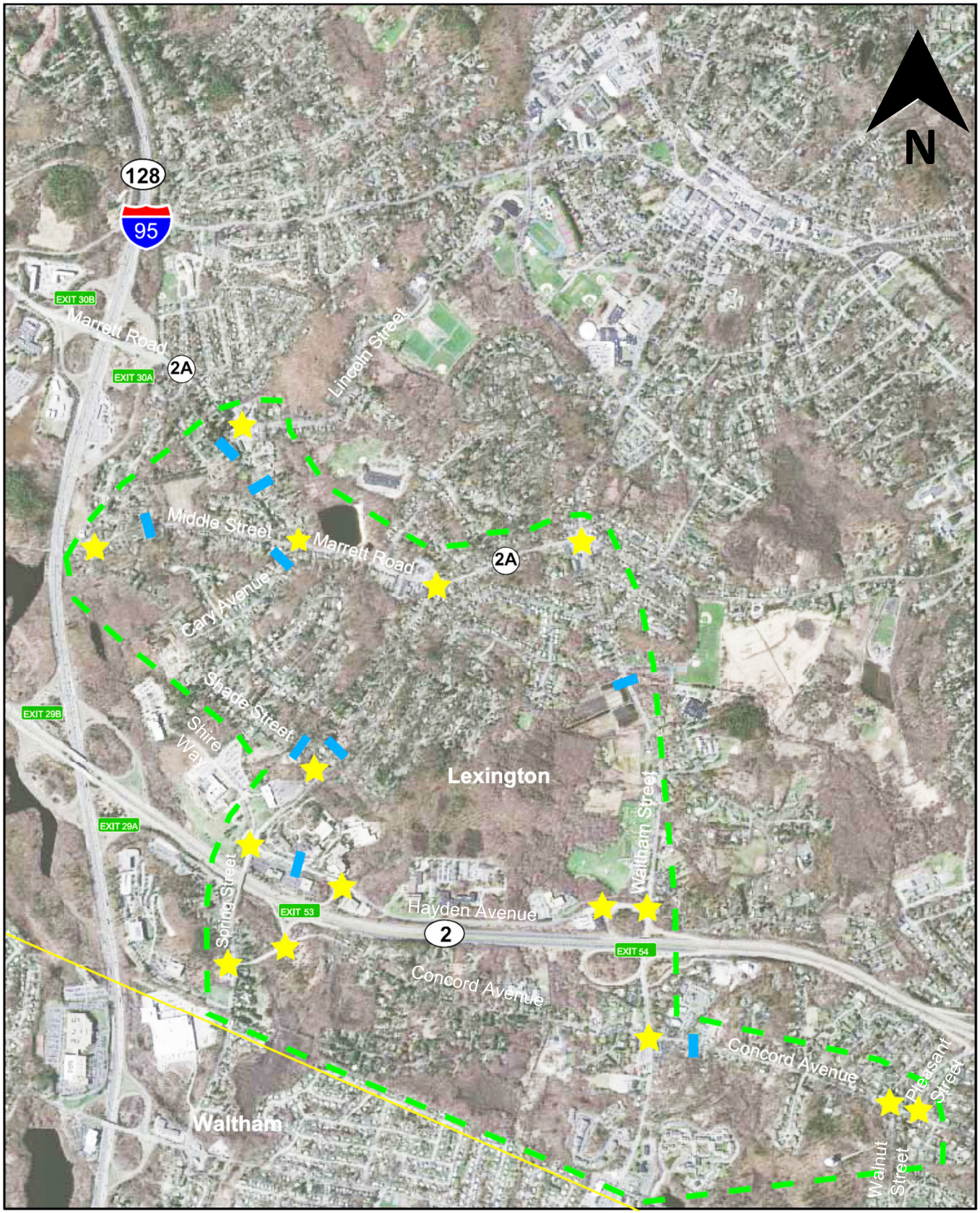
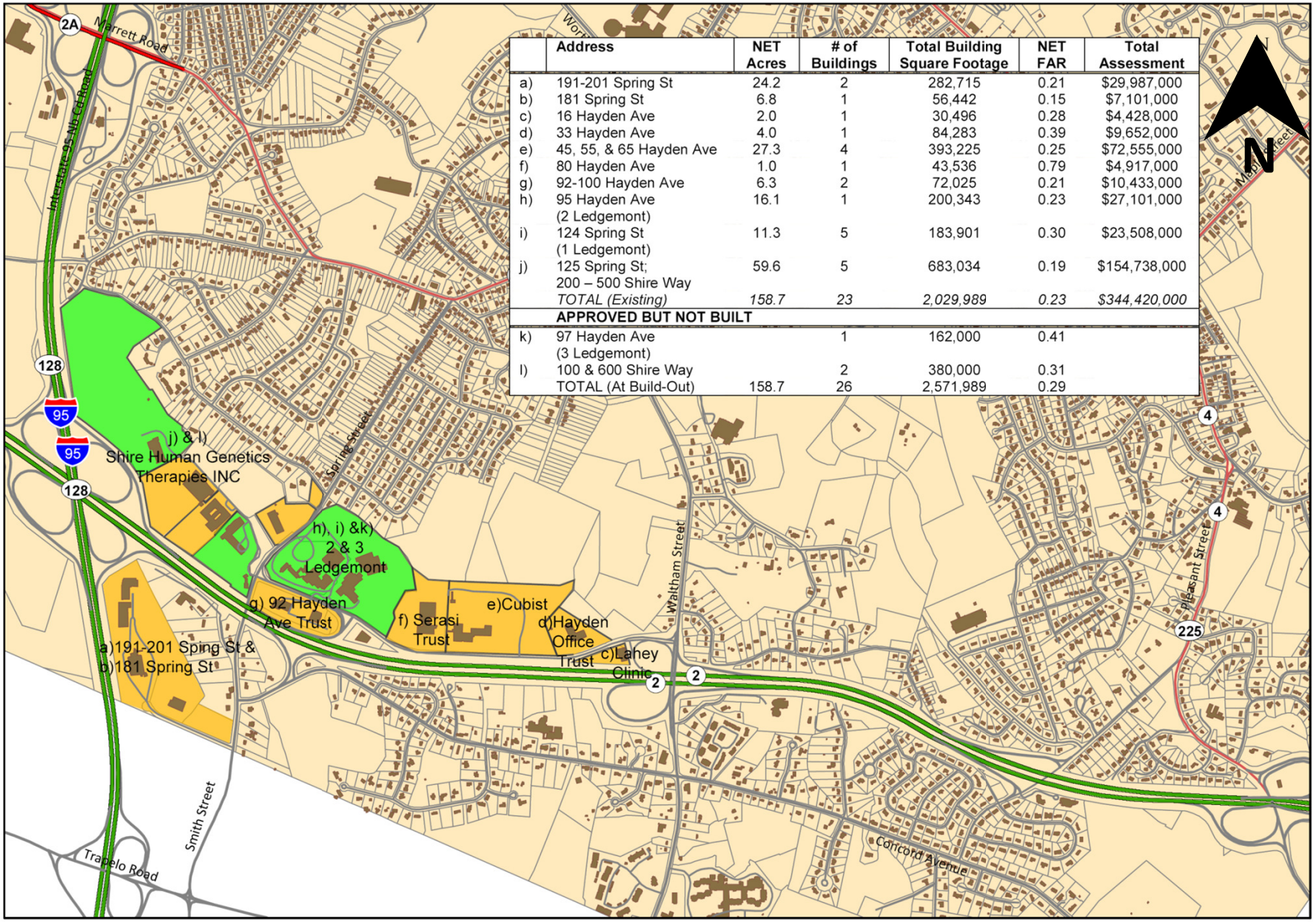


Figure 1
Study Area with New Traffic Count Locations



	Address	NET Acres	# of Buildings	Total Building Square Footage	NET FAR	Total Assessment
a)	191-201 Spring St	24.2	2	282,715	0.21	$29,987,000
b)	181 Spring St	6.8	1	56,442	0.15	$7,101,000
c)	16 Hayden Ave	2.0	1	30,496	0.28	$4,428,000
d)	33 Hayden Ave	4.0	1	84,283	0.39	$9,652,000
e)	45, 55, & 65 Hayden Ave	27.3	4	393,225	0.25	$72,555,000
f)	80 Hayden Ave	1.0	1	43,536	0.79	$4,917,000
g)	92-100 Hayden Ave	6.3	2	72,025	0.21	$10,433,000
h)	95 Hayden Ave (2 Ledgemont)	16.1	1	200,343	0.23	$27,101,000
i)	124 Spring St (1 Ledgemont)	11.3	5	183,901	0.30	$23,508,000
j)	125 Spring St; 200 – 500 Shire Way	59.6	5	683,034	0.19	$154,738,000
	TOTAL (Existing)	*158.7*	*23*	*2,029,989*	*0.23*	*$344,420,000*
	APPROVED BUT NOT BUILT					
k)	97 Hayden Ave (3 Ledgemont)		1	162,000	0.41	
l)	100 & 600 Shire Way		2	380,000	0.31	
	TOTAL (At Build-Out)	158.7	26	2,571,989	0.29	

ENGINEERS FST Since 1914

Individual parcels in the Hayden Avenue and Spring Street corridor

Approved, but not yet fully built out sites

0 1,000 2,000 Feet

Figure 2
South Lexington Transportation Study
Development Sites

1.1 OVERVIEW (Continued)

Several Study Area intersections are already operating at or projected to be operating at LOS E or F during peak hours. Some of these intersections have environmental and physical constraints that make it infeasible to create LOS A-D peak hour traffic operations.

If the Town's current guidelines for traffic analysis are strictly adhered to, peak hour traffic operations *worse than* levels of service LOS A-D – i.e., LOS's E-F, are *not* permitted. Therefore, development above and beyond the levels already approved moderate levels were deemed infeasible unless the Town alters its analysis criteria. Put simply, the moderate and high development scenarios were assumed to be identical for the purposes of this study.

In the future, if the Town opts to change its guidelines to the MEPA standard of mitigating traffic to no worse than 'No-Build' conditions, rather than simply LOS A-D peak hour operations, there may be opportunities to add new*, as yet unapproved, d*evelopment along the Hayden/Spring corridors through zoning alterations. For the time being, however, we cannot assume the guidelines will be violated.

This Study provides an operational analysis of walking, biking, and motor vehicle modes under existing and future traffic conditions. Study findings were coordinated with the Town as well as residential and commercial stakeholders. Using the findings of this Study, the Town seeks to improve pedestrian, bicycle and vehicular safety while improving overall traffic operations so that future economic development along the Hayden Avenue and Spring Street corridors is accommodated without adversely affecting the quality of life in nearby residential neighborhoods.

To document the Study, three Technical Memoranda were prepared. This Tech Memo 1 addresses existing traffic conditions, data collection, and traffic mitigation agreements/commitments. Additionally,it includes build out assumptions as well as detailed market analyses findings completed by RKG Associates. Tech Memo 2 identifies and evaluates pros and cons of alternative transportation mitigation measures from a multimodal usage perspective. Recommendations based on the findings of Tech Memos 1 and 2, as well as follow-up analyses and communications are documented in Tech Memo 3.

1.2 PURPOSE

Purposes of the Study include:

- Identifying the potential cumulative traffic impacts of permitted or potential development or redevelopment projects in South Lexington along Spring and Hayden Streets under moderate and high development scenarios. *Because unmitigatable levels E or F peak hour congestion were calculated with the moderate buildout option, FST, in discussions with Town staff, concluded it would be inappropriate to add still more unapproved development traffic to create an excessive 'high' end case.*
- Determining what, if any, transportation improvements should be implemented beyond what has already been proposed or planned to improve multi-modal connections and neighborhood livability features, including proposed greenway connections;
- Identifying priorities for implementation; and
- Providing preliminary order-of-magnitude cost estimates for proposed improvements *within public rights-of-way*.

A total of fifteen intersections, discussed in detail further on, were identified by the Town of Lexington for inclusion in the approved Study Area.

The community review process for this Study included a kick-off meeting with Town of Lexington staff on October 22, 2012 as well as several follow-up meetings with Town staff prior to and after public meetings. The public process for the Study included:

- A business community meeting held on October 10, 2013 to discuss existing conditions findings and requests for input on traffic, mobility, safety, and livability needs as well as options for mitigation measures and land use findings and market projections for Spring/Hayden development corridor businesses.
- A follow-up public meeting held on October 21, 2013 to discuss options and priorities for mitigation. There was a focused discussion of multi-modal, 'Complete Streets' infrastructure needs. Pros and cons of potential options for transportation mitigation measures above and beyond those already programmed were also discussed.
- A final public meeting held on November 18, 2014 to discuss preliminary recommendations and obtain further input on options presented. Additional input, received after the meeting, was also considered prior to documenting recommendations. Included are two letters requesting pedestrian greenway connections and discussions with Town staff on the variability of peak hour South Lexington traffic demands.

2. EXISTING CONDITIONS

2.1 TRANSPORTATION INFRASTRUCTURE

FST conducted field reconnaissance of the fifteen (15) study area intersections to observe traffic operations, measure roadway and intersection geometry, record speed limits, note the presence of traffic control devices and pavement markings, identify adjacent land uses, the general roadway network layout, and general topography of Study Area Roads. Figure 3 illustrates the existing lane configurations associated with the study area with existing traffic signals, including a 2014 installation at Concord and Spring Streets.

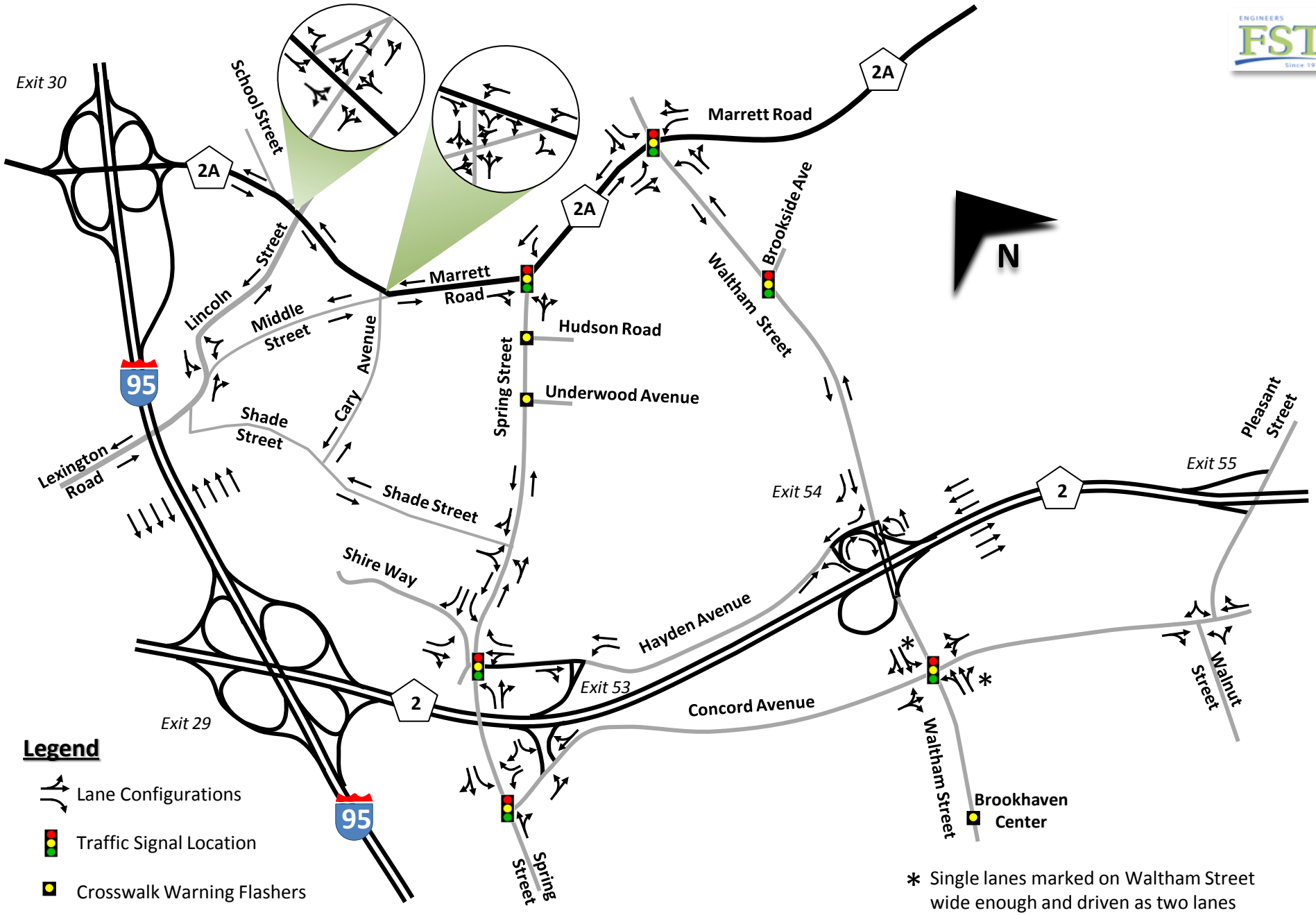
Regional access to the South Lexington Study Area is provided via Interstate-95 (formerly Route 128) and State Route 2, both limited access highways on the National Highway System. I -95 has interchanges at Route 2A (Marrett Road) and Route 2. Route 2 has additional interchanges at Hayden and Concord Avenues, Waltham Street, as well as further to the east at Pleasant Street.

All analyzed intersections in the study area are under the Town of Lexington or MassDOT jurisdiction. Figure 3 illustrates the lane configurations and roadway jurisdictions of study area intersections, including six that are controlled by traffic signals. Below is a summary of existing conditions at key study area intersections:

- Spring Street at Marrett Road (Route 2A)

Marrett Road at Spring Street Aerial
Source: GoogleEarth Maps

This recently signalized three-way 'T' intersection consists of Marrett Road (Route 2A) running in an east/west direction, but skewing northerly. Spring Street enters the intersection from the south. Bridge Street, a local road which used to enter the intersection from the east when it was unsignalized is now dead-ended. Spring Street is under the jurisdiction of the Town of Lexington, while Marrett Road is under the jurisdiction of MassDOT. Both Spring Street and Marrett Road are functionally classified as Urban Minor Arterials and both are heavily travelled.



Not to Scale

South Lexington Transportation Study

Existing Intersection and Corridor Lane Configurations

Figure 3

- Spring Street and Marrett Road (Continued)

Marrett Road approaches the intersection in the westbound direction with an exclusive left lane and exclusive through lane. Marrett Road also has skip-dash centerline within the intersection to help reinforce its east to west skew through the intersection.

Both northbound Spring Street and eastbound Marrett Road have single lane approaches to the intersection. Sidewalks are provided on all sides of the intersection. A painted divided median is provided on Marrett Road opposite the westbound left turn lane. Refer to the photos below.

Spring Street NB Approach to Marrett Road (Rte. 2A)

Marrett Road(Rte. 2A) EB Approach to Spring Street

Recently reconfigured, this intersection is ADA-compliant with wheelchair ramps and has sidewalks on all corners. However, bicycles must share the road, as there is not enough room in the layouts of the intersection to provide separate bike lanes. Logos designating that bicycles have detection are provided on each approach lane to the intersection. Spring Street between Hayden Avenue and Marrett Road, has shared lane markings ("sharrows") to alert motorists that cyclists are sharing the travel lanes in both directions.

- Spring Street, Hayden Avenue, and Shire Way

At this four-way, recently-modified signalized intersection, all approaches flare out to provide auxiliary lanes to accommodate traffic movements. The intersection has commercial development on all four corners. Spring Street, under the jurisdiction of the Town of Lexington, runs in a north/south direction, Hayden Avenue is an east-west facility under MassDOT jurisdiction. Shire Way is a private road that comprises the west leg of the intersection. Its alignment quickly turns to the north, providing access to Shire development sites.

Hayden Avenue at Spring Street Aerial
Source: GoogleEarth Maps

The northern approach of Spring Street is comprised of an exclusive left turn lane with a single shared through/right-turn lane. The southern approach of Spring Street exclusive left, through, and right-turn lanes.

Looking south across Shire Way from Spring Street

Looking north approaching Shire Way and Hayden Avenue from Spring Street

Looking west across Spring Street from Hayden Avenue

Looking east from Shire Way across Spring Street to Hayden Avenue

The eastbound approach of Shire Way has a left-turn lane and shared through/right-turn lane. The westbound Hayden Avenue approach has separate flared right turn lane separated by a triangular grassed island plus exclusive left-turn and through lanes.

Sidewalks are provided on the southwest side of Shire Way, the west side of Spring Street and the north side of Hayden Avenue. Sidewalks have ADA compliant crossings and zebra crosswalks on the west and north sides of the intersection. Logos designating that bicycles have detection are provided on each approach lane to the intersection.

- Waltham Street at Marrett Road (Route 2A)

Marrett Road (Rte. 2A) at Waltham Street
Aerial Source: GoogleEarth Maps

Surrounded by gas stations and neighborhood commercial, at this four-way signalized intersection, all four approaches flare out to provide auxiliary lanes for accommodating traffic movements. Marrett Road (Route 2A) under MassDOT jurisdiction has an east-west orientation, while Waltham Street, under Town of Lexington jurisdiction, has a north-south orientation.

Looking west across Waltham Street from Marrett Road (Rte. 2A)

Looking east across Waltham Street from Marrett Road (Rte. 2A)

Like the nearby intersection of Marrett Road at Spring Street, this intersection has undergone recent safety and capacity upgrades. Unlike the above aerial taken before improvements were implemented, exclusive left turn lanes are provided on all approaches to the intersection. The exclusive right turn lane separated by a channelization island, as shown on the aerial, has been eliminated to improve pedestrian safety. Additionally, the southbound departure lane provides a short double merge lane to help accommodate right turn movements from Marrett Road onto Waltham Street in a safer manner. Just south of the intersection, Waltham Street merges back to one lane and leads to an interchange with Route 2 approximately one mile to the south.

Looking west on the Marrett Road (Rte. 2A) approach to Waltham Street

All four corners of the intersection have ADA compliant sidewalks, zebra crosswalks and wheelchair ramps. We note that there is a rumble strip across a driveway on the westbound Marrett Road approach to the intersection. While not pedestrian-friendly and non ADA-compliant, (see photo below), the rumble strip notifies angle-parked motorists who otherwise are backing directly onto the travel way.

Public concerns were raised about peak period queuing at this intersection. The Town is exploring timing, phasing, or striping modifications to reduce peak period queuing without any further widening.

- Waltham Street at Concord Avenue

Waltham Street at Concord Avenue
Aerial Source: GoogleEarth Maps

All four legs of this four-way signalized intersection are marked with single lane approaches. Waltham Street is considered an Urban Principal Arterial, while Concord Avenue is an Urban Minor Arterial.

Waltham Street approaches to this four-way signalized intersection are wide enough to provide some unmarked room for traffic to bypass left-turning traffic. Neighborhood commercial or residential development is found on all four corners of the intersection.

Looking north on Waltham Street to Concord Avenue

Looking south on Waltham Street to Concord Avenue

From the field review, there are difficulties accommodating left turn movements on all legs of the intersection. There are no particular bicycle accommodations at this intersection and the zebra crosswalks on all legs do not have ADA-compliant wheelchair ramps. The Town has recently designed and is programming measures including signalization improvements to enhance operations for motor vehicle, pedestrian, and bicycle users of this intersection. Sidewalks are missing on the west side of Waltham Street.

- Spring Street at Concord Avenue

Spring Street at Concord Avenue Aerial
Source: GoogleEarth Maps

This T intersection is marked with two approach lanes on the westbound Concord Avenue approach and the southbound Spring Street approach. Concord Avenue and Spring Street are classified as Urban Minor Arterials and are both under the jurisdiction of the Town of Lexington. The Town designed and implemented a new traffic signal at this intersection during the summer of 2013. Formerly, the northbound Spring Street approach was divided by two closely spaced medians eliminated with the new signal (see right photo taken during 2014). Prior to the modifications, there were no crosswalks and a sidewalk was only provided on the west side of Spring Street. The Town has plans to add a new sidewalk to the south side of Concord Avenue from Spring Street to Waltham Street. To alert motorists of bicyclists using Concord Avenue, sharrows will be added to travel lanes in both directions.

From the field review and traffic counts discussed further on, there previously were difficulties accommodating left turn movements out of Concord Avenue and there were no particular bicycle accommodations at this intersection. The new signal enhanced operations for all intersection users as it includes bicycle detection and count down pedestrian signals.

Looking west on Concord Avenue to Spring Street (prior to signalization)

Looking north on Spring Street to Concord Avenue (after new signal)

- Marrett Road (Route 2A) at Lincoln and School Streets

Lincoln Street at Marrett Road (Rte. 2A) Aerial View
Source: Google Earth Mapping

Surrounded by corner commercial, the Bridge School in the northwest quadrant, and residences, this five-way unsignalized intersection is located within a half-mile of the Route 2A interchange with I-95. As can be seen in the aerial, Lincoln Street has three two-way approaches to the intersection which creates a landscaped channelized island on the northwest quadrant of the intersection.

Looking south on the east Lincoln Street approach to Marrett Road (Rte. 2A)

Looking west on the Marrett Road (Rte. 2A) approach to Lincoln Street

Looking west to Marrett Road (Rte. 2A) crosswalk approaching Lincoln Street

All approaches are marked with a single lane. Marrett Road, an Urban Minor Arterial under the jurisdiction of MassDOT, has an east-west orientation, while the three legs of Lincoln Street, under Town of Lexington jurisdiction, have a north-south orientation. Lincoln Street, classified as an Urban Collector, is stop-controlled on all three of its approaches to Marrett Road. Stop lines are also provided on the Lincoln Street approaches. School Street is also stop controlled on its approach to approaches Marrett Road. While it approaches at nearly a 90º angle after a sharp turn to the right, motorists can exit Marrett Road onto School Street at a very shallow angle that permits high speed turns onto School Street. Conversely left turns into School Street from Marrett Road are very difficult, requiring a difficult U-turn maneuver that is hazardous to pedestrians. ADA-compliant cross-walks and wheelchair landings are provided on both Lincoln Street legs of the intersection. During late 2012, the crosswalk on Marrett Road was not ADA-compliant, though warnings are provided in both directions. Following recent 2014 Marrett Road modifications, the crosswalk was made ADA-compliant with added ramps.

- Spring Street at Shade Street

Shade Street at Spring Street Aerial View
Source: Google Earth Mapping

One of the new Shade Street speed humps

Shade Street, aptly named, intersects Spring Street to form a skewed'T' intersection. Resurfaced during 2012, Shade Street is classified as a local street, but is used as a short-cut route by motorists trying to avoid Spring Street during the busiest hours of typical weekdays. Speed humps were installed on Shade Street to further its 'traffic calming' features during 2014. The new humps augment sharrows and marked shoulders installed during 2012. Spring Street is classified as a rural minor arterial. All approaches to this intersection are single lanes. Shade Street is controlled by a stop sign and has no raised sidewalks. Except for the commercially-zoned southwest corner, land uses surrounding this intersection are single family residences.

Attendees at a recent meeting indicated that pedestrians have difficulty crossing Spring Street at Shade Street. At present, Spring Street has a sidewalk on the west side only and no crosswalk at Shade Street.

Looking North on Spring Street approach to Shade Street

Looking South on Spring Street to Shade Street

Looking east on Shade Street to Spring Street

- Route 2 Eastbound Ramps at Concord Avenue

Concord Avenue at Route 2 Eastbound on/off and Route 2 Westbound on-ramp at Hayden Avenue
Aerial Source: GoogleEarth Maps

Route 2 eastbound, a Principal Arterial, has an on- and off-ramp at Concord Avenue, an Urban Minor Arterial. Concord Avenue has one lane in each direction at its intersection with the Route 2 eastbound ramps that are also one lane in each direction. Below is an aerial of the intersection. The Route 2 eastbound off-ramp has a yield control right turn out only to Concord Avenue westbound. The left turn from Concord Avenue into the Route 2 eastbound has no left turn lane protection from rear-end collisions, although the paved approach of Concord Avenue is wide enough to allow motorists to pass to the right while vehicles are waiting to turn left. MassDOT has jurisdiction over the on/off-ramps, while the Town of Lexington has jurisdiction of Concord Avenue.

There are no sidewalks or visible bicycle accommodation features on Concord Avenue at this intersection. Concord Avenue is wide enough to provide bicycle accommodations and bicyclists are permitted to use it. Bicycles, however, are not permitted to access the Route 2 Eastbound on/off ramps. Land uses in the immediate area are low-density residential uses.

- Hayden Avenue at Route 2Westbound On-ramp

Refer back to page 16 for an aerial illustration of the Route 2 westbound on-ramp at Hayden Avenue. Hayden Avenue was recently resurfaced and a sidewalk has been added to its north side. It has a wide striped shoulder for bicycle accommodations. Route 2 is a Principal Arterial, while Hayden Avenue is designated as an Urban Collector. The Route 2 westbound-on ramp is under the jurisdiction of MassDOT, while most of Hayden Avenue is under the jurisdiction of the Town of Lexington. Westbound traffic approaching the 'T' intersection of the Route 2 on-ramp have an exclusive left turn and through lane.

Below are recent photos of both approaches of Hayden Avenue to the Route 2 westbound on-ramp located nearly a quarter-mile east of Hayden Avenue's signalized intersection with Spring Street.

Looking east on Hayden Avenue to Route 2 westbound On-ramp

Looking west on Hayden Avenue to Left turn lane at Route 2 westbound On-ramp

The newly installed bituminous concrete sidewalk on the north side of Hayden Avenue is separated from the Hayden Avenue westbound travel lane by a painted shoulder and a narrow grassed buffer area. Shoulders adjacent to the left turn lane on Hayden Avenue are not wide enough to be classified as bicycle lanes.

- Hayden Avenue at Route 2 Westbound Off-ramp

Hayden Avenue at Westbound off-ramps
Aerial Source: GoogleEarth Maps

Similar to the Hayden Avenue at Route 2 On-ramp, Hayden Avenue in the vicinity of the westbound off-ramp has recently had pavement improvements, but no sidewalks are available for use by pedestrians. Readily visible in the aerial to the left, Hayden Avenue's curvature to the southwest adversely affects motorist sightlines looking to the left from this 'T' intersection, particularly during snow events when sight lines along the south edge of Hayden Avenue become restricted. Stop controlled left turn volumes, as discussed further on, are heavy at this intersection, thus adding to difficulty of motorists who desire to turn left the from Route 2 westbound. Right turns exiting onto Hayden Avenue are controlled by yield signs. Hayden Avenue, as mentioned previously, is under the jurisdiction of the Town of Lexington, while the off-ramp is under the jurisdiction of MassDOT. Commercial land abuts the intersection. Pedestrian and bicycle accommodations are highlighted at this intersection, as a new bituminous concrete sidewalk buffered by a grass strip is provided on the north side of Hayden Avenue. The shoulders on both sides of Hayden Avenue are wide enough to accommodate bicycles.

Looking east on Hayden Avenue to Route 2 westbound Off-ramp

Looking north to Hayden Avenue at Route 2 westbound Off-ramp

- Hayden Avenue at Waltham Street and Route 2 Westbound off-ramp

Hayden Avenue at Waltham Street and Route 2 Westbound off ramps
Aerial Source: GoogleEarth Maps

Waltham Street is classified as an Urban Principal Arterial and is under the jurisdiction of the Town of Lexington north of Hayden Avenue and under MassDOT jurisdiction between Concord and Hayden Avenues. The segment of roads including the westbound off-ramp from Route 2 and Hayden Avenue between the ramps and Waltham Street are also under MassDOT jurisdiction. Hayden Avenue west of the Route 2 WB off-ramp is under Town of Lexington jurisdiction.

Looking east on Hayden Avenue to Left turn lane approaching Waltham Street

Looking north on Waltham Street at Route 2 westbound off-ramp and cross-walks

Waltham Street northbound approaches Hayden Avenue with a separate left and through lanes. The southbound Waltham Street approach has an exclusive channelized right turn lane and a single through lane wide enough to accommodate two or separate bike lanes. Waltham Street land uses include the Stone Meadow Golf Course/Driving Range northwest of the interchange, a junk yard to the northeast, as well as single family residences. Hayden Avenue land uses are primarily commercial. The north leg of Waltham Street has a crosswalk and the east side of Waltham Street has a bituminous concrete sidewalk. Hayden Avenue approaches with a separate exclusive left and right turn lanes. The left turn lane is stop controlled, while the right turn lane is yield-controlled

- Lincoln at Middle Streets

Lincoln Street at Middle Street
Aerial Source: Lexington, MA GIS

Lincoln Street is functionally classified as an Urban Collector Street, while Middle is classified as a local street. Both Lincoln and Middle Streets are two-way with one lane in each direction. Middle Street is stop controlled at its intersection with Lincoln Street. Abutters to this intersection are primarily low density single family homes. Approaches to this intersection are all accommodated in one lane each.

Middle Street approaches Lincoln Street a downslope. Wide pavement at the intersection allows motorists who are making left turns in or out of the intersection to traverse it in many ways. The intersection serves as part of a cut-through route to Shade Street which is accessed via Weston Street.

Below are recent photos of the Lincoln/Middle Streets intersection approaches. As indicated on the photo to the left, the north side of Middle Street has a sidewalk. Bike accommodations are not highlighted, as bicycles operate on a 'share the road' basis without any particular signs or markings.

Looking west on Middle Street approach to Lincoln Street

Looking north on Lincoln Street to Middle Street

- Marrett Road (Route 2A) at Cary and Middle Streets

This four-way intersection is offset by a median created by the criss-crossing of Cary and Middle Streets south of Marrett Road. Refer to the aerial to the left for an overview illustration of the intersection.

Marrett Road (Rte. 2A) at Cary Avenue and Middle Street
Aerial Source: GoogleEarth Maps

Cary Avenue and Middle Street are stop controlled at their intersections with Marrett Road. Cary Avenue is stop controlled on both of its approaches to Middle Street.

Middle Street has a cross-walk at its intersection with Marrett Road. Marrett Road has a cross-walk on the west side of its intersection with Middle Street. Both are visible in the aerial photo. Middle Street has a sidewalk on its north side through this area, while Cary Avenue has none and Marrett Road has bituminous concrete sidewalks on both sides to the east of the intersection that separated from traffic by grass strips. West of Carey Avenue, Marrett Road has a sidewalk on the south side only to Lincoln Street.

Looking east on Marrett Road (Rte. 2A) to Cary Avenue just east of Middle Street

- Concord Avenue at Walnut and Pleasant Streets

Concord Avenue at Pleasant and Walnut Streets
Aerial Source: GoogleEarth Maps

Both Walnut and Pleasant Streets are classified as an Urban Collector Streets, while Concord Avenue is a Minor Urban Arterial. At their intersections with Concord Avenue, Separated by less than 300 feet, Walnut Street and Pleasant Streets are stop-controlled at their intersection with Concord Avenue. Walnut Street is divided by a short median. Concord Avenue on the other hand has free flow, except when blocked by vehicles waiting to turn left onto either Walnut or Pleasant Streets.

Much of the traffic that turns right from Pleasant onto Concord Avenue turns left onto Walnut Street and vice versa. Because all approaches have one lane, congestion is experienced at both intersections during peak hours.

Looking north on Walnut Street
to Concord Avenue

Looking west on Concord Avenue
to Walnut Street downslope approaching it

Looking west on Concord Avenue
to Pleasant Street

Looking south on Pleasant Street to Concord Avenue

2.2 DATA COLLECTION

Manual Turing Movement Traffic Counts /Seasonal Variations

In order to evaluate traffic operating conditions at selected study area intersections in Lexington, a traffic count program (refer to the Technical Appendix for details) was undertaken to augment historical count data. The manual turning movement component of the traffic count program consisted of new manual turning-movement counts (TMCs) at fifteen evaluated intersections. TMC's were performed at the following study area intersections from 7-9 AM and 4-6 PM and included pedestrians and bicycles. Manual counts were performed when schools were in session.

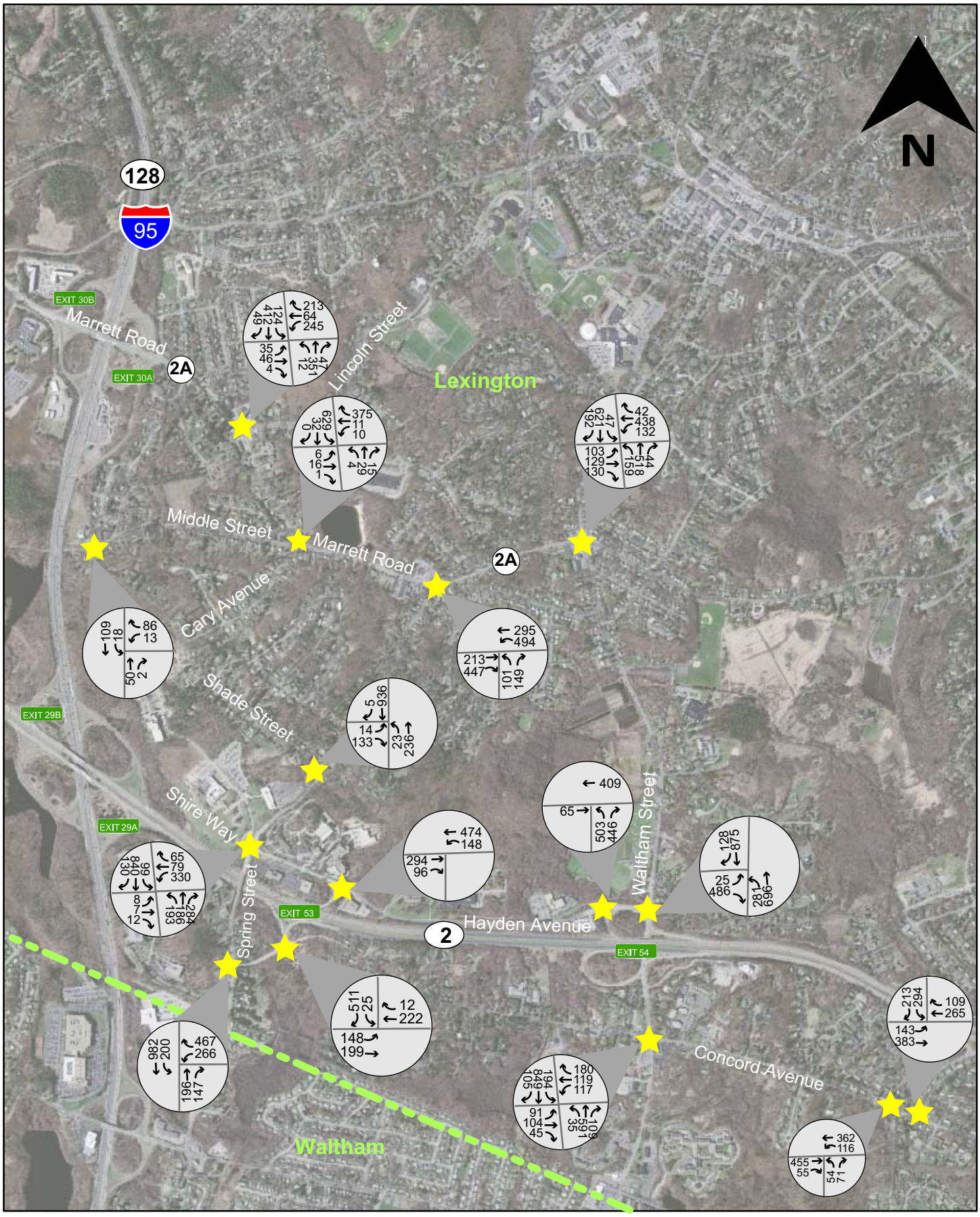
Traffic Signal Controlled

- Spring Street and Marrett Road (Route 2A)
- Spring Street, Hayden Avenue, and Shire Way
- Waltham Street and Marrett Road
- Waltham Street and Concord Avenue; and
- Spring Street and Concord Avenue (signalized in 2014).

Unsignalized

- Spring Street and Shade Street
- Route 2 Eastbound Ramps at Concord Avenue
- Hayden Avenue at Route 2Westbound On-ramp
- Hayden Avenue at Route 2 Westbound Off-ramp
- Hayden Avenue at Waltham Street
- Lincoln Street at Middle Street
- Marrett Road at Lincoln Street
- Marrett Road at Cary and Middle Streets
- Concord Avenue at Walnut Street
- Concord Avenue at Pleasant Street

Due to on-going construction activities in the Town, it was necessary to split up the morning and afternoon count programs to avoid impacts from traffic diversions. Morning counts were performed during the month of November, 2012, while afternoon counts were performed during January 2013. According to the latest available MassDOT seasonal adjustment factors (2011), counts performed during November are typically *reduced by 3%* to simulate average annual conditions, while counts performed during January are typically *increased by 3%* for assessing operations. These factors were applied to the counts accordingly. Figures 4A and 5A illustrate total vehicle counts, while Figures 4B and 5B illustrate pedestrian/bicycle counts during the AM and PM peak hours, respectively. The highest recorded pedestrian volumes were found on Marrett Road at Middle Street and Cary Avenue. Variability in South Lexington counts occurs regularly, depending on traffic conditions on Route 128 (I-95). When traffic diversions from I-95 occur, counts are higher than when diversions are not occurring. Some imbalances occur when counts are taken on different weekdays, and seem to be more pronounced during the AM than PM peak hours.



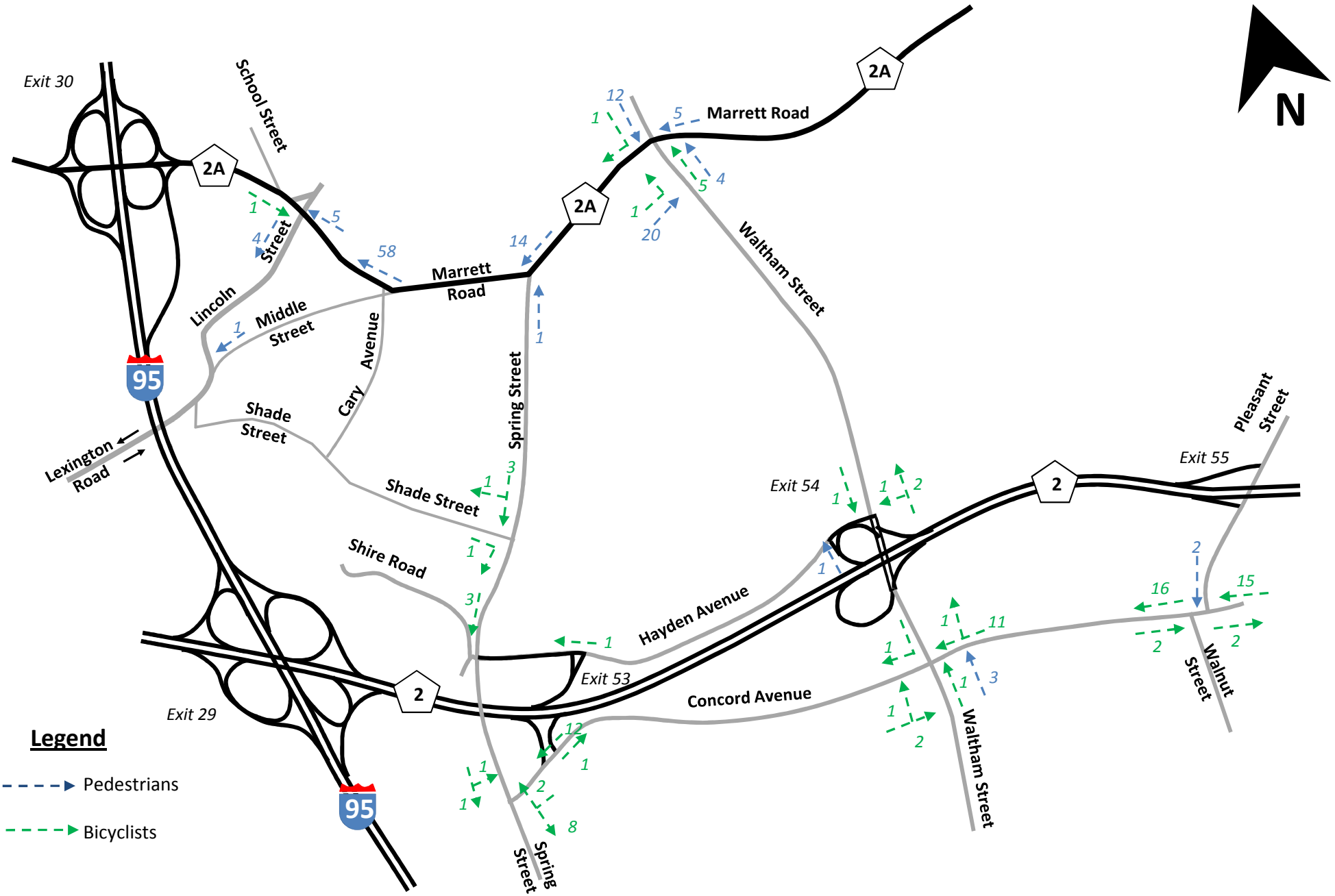
ENGINEERS FST Since 1914

Study Area Intersection

Lexington/Waltham Townline

0 1,000 Feet

Figure 4a
South Lexington Transportation Study
2013 AM Peak Turning Movements

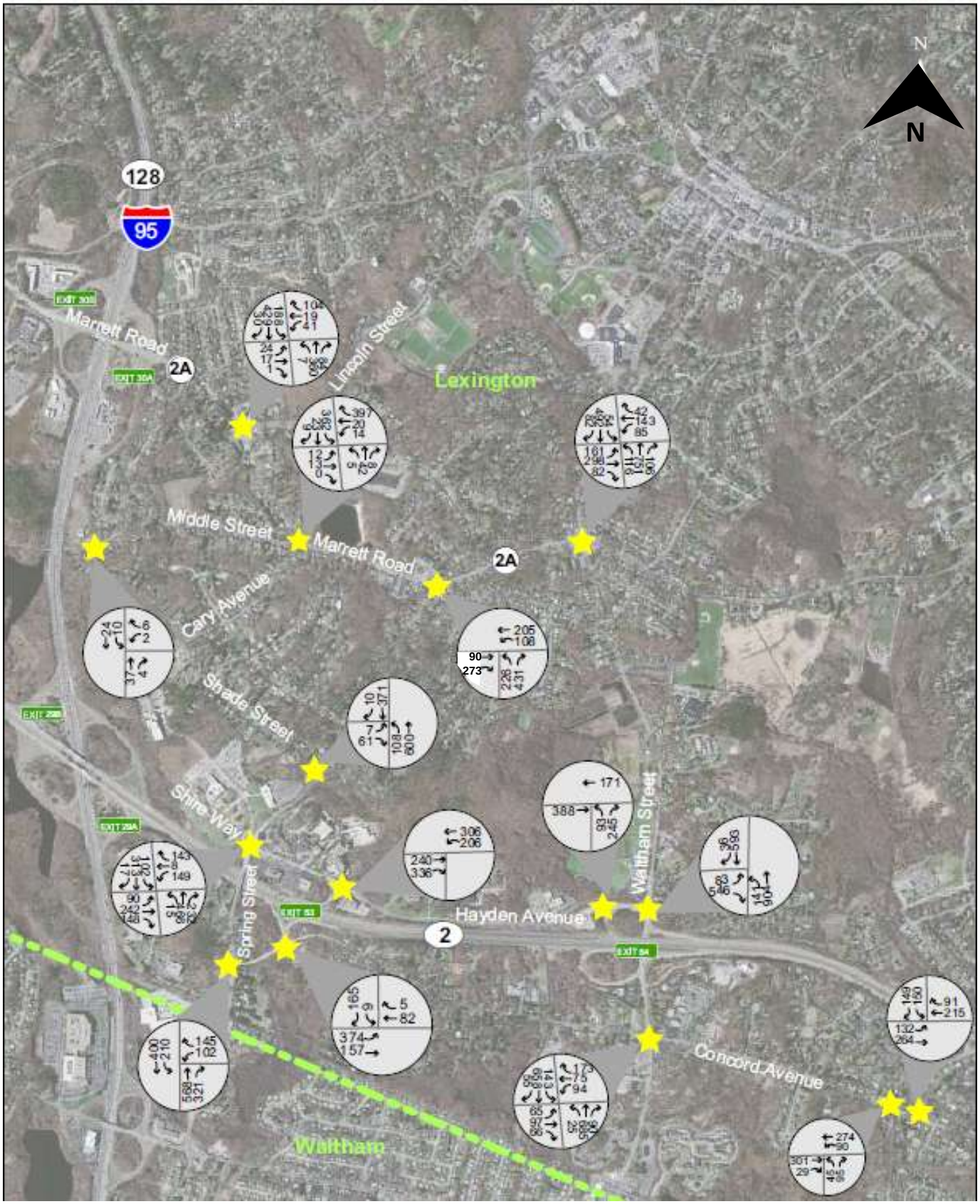


Not to Scale

South Lexington Transportation Study

AM Peak Hour Bike and Pedestrian Counts

Figure 4b

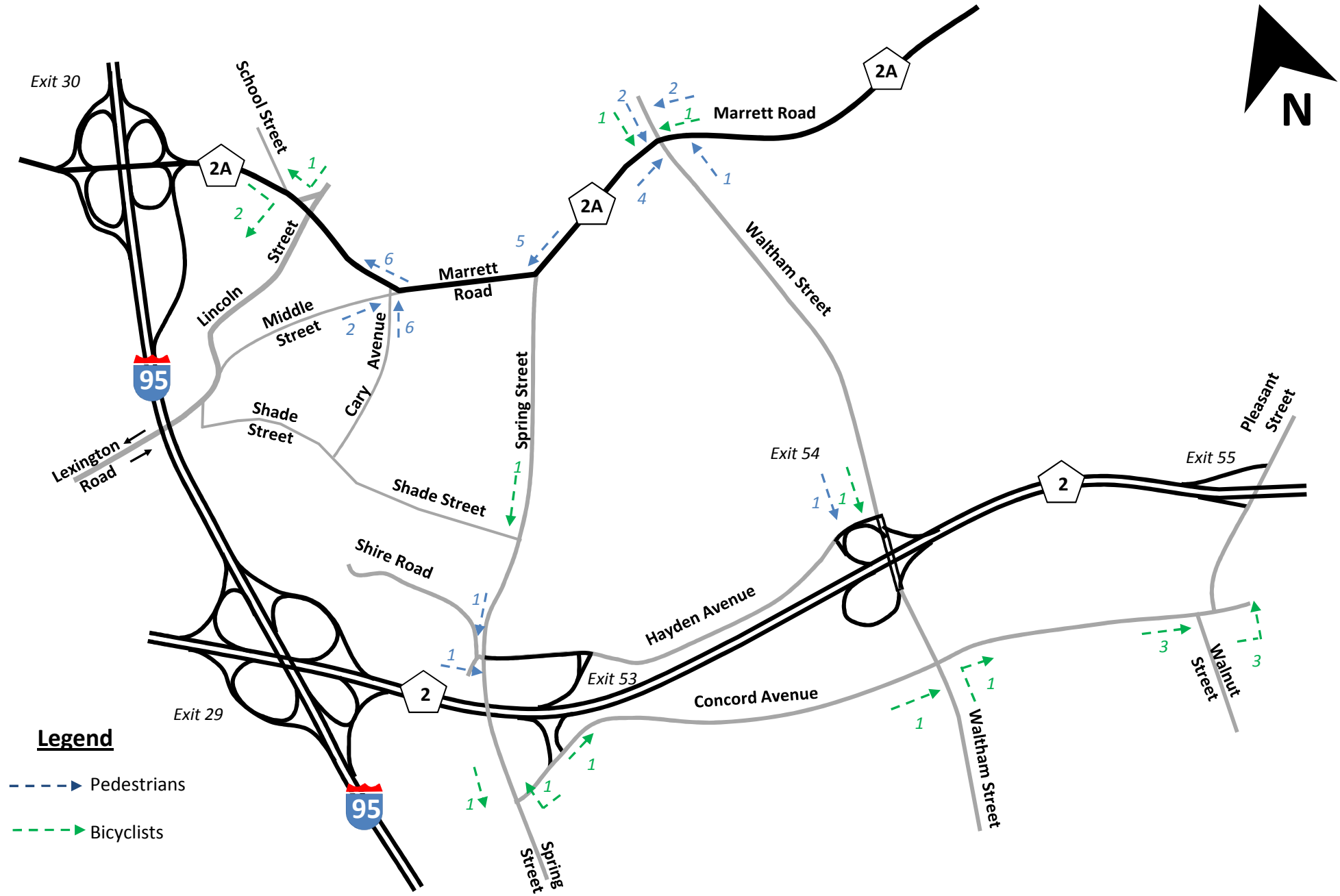


Study Area Intersection

Lexington/Waltham Townline

0 1,000 Feet

Figure 5a
South Lexington Transportation Study
2013 PM Peak Turning Movements



Not to Scale

ENGINEERS FST Since 1914

South Lexington Transportation Study

PM Peak Hour Bike and Pedestrian Counts

Figure 5b

Automatic Traffic Recorder Counts

Automatic pneumatic traffic recorders (refer to the Technical Appendix for details) were placed on nine (9) streets within the South Lexington Study Area. Table 1 organizes the count data by link, ranked from highest to lowest average weekday volume counted. Because counts in November were disrupted by construction activities, it was decided to re-count the average weekday traffic at all nine locations. Because the disruption was identified during the second day of the count program, we believe the data obtained still has some use. Waltham Street south of Brookside Avenue carried the highest volumes with an average annual daily traffic (AADT) of 15,500-15,900 vehicle trips per day, while Middle Street had the lowest volumes, with 300-450 vehicles AADT. Overall rounded ADTs for November and January were very similar.

Table 1

South Lexington Average Weekday Traffic & Peak Hour Summary[1]

Street Name	ADT Unadjusted (Wed - Nov)	Adjusted to AADT	Rounded AADT	AM Peak	PM Peak	K Factor
Waltham St s of Brookside Ave	16,292	15,487	15,500	1,611	1,610	0.10
Marrett Road s of Lincoln St.	8,880	8,441	8,450	940	843	0.11
Spring St n of Shade St	7,573	7,199	7,200	1,026	898	0.14
Concord Ave e of Waltham St	7,276	6,917	6,900	722	779	0.11
Hayden St w of Route 2 ramps	5,908	5,616	5,600	1,000	601	0.18
Lincoln St w of Marrett Rd	1,495	1,421	1,400	182	205	0.15
Shade St w of Spring St	1,378	1,310	1,300	170	186	0.13
Cary Ave s of Middle St	901	856	850	86	106	0.12
Middle St e of Lincoln St	467	444	450	39	65	0.14
Total Volumes			***47,650***	***5,776***	***5,293***	***0.12***

Street Name	ADT Unadjusted (Thurs - Jan)	Adjusted to AADT	Rounded AADT	AM Peak	PM Peak	K Factor*
Waltham St s of Brookside Ave	15,752	15,900	15,900	1,494	1,563	0.10
Marrett Road s of Lincoln St.	8,917	9,001	9,000	955	895	0.11
Concord Ave e of Waltham St	6,991	7,057	7,100	722	639	0.10
Spring St n of Shade St	6,855	6,919	6,900	941	802	0.14
Hayden St w of Route 2 ramps	5,688	5,741	5,750	892	610	0.16
Shade St w of Spring St	1,177	1,188	1,200	134	177	0.15
Lincoln St w of Marrett Rd	1,016	1,026	1,050	131	112	0.11
Cary Ave s of Middle St	897	905	900	79	96	0.11
Middle St e of Lincoln St	287	290	300	31	30	0.10
Total Volumes			***48,100***	***5,379***	***4,924***	***0.11***

1- Sorted by highest to lowest rounded AADT

*K factor is the proportion of ADT that occurs during the peak hour to the day, whether AM or PM

Daily peak hour is highlighted in yellow.

From Table 1, Waltham Street at 15,500-15,900 AADT carries the highest measured daily volumes in the South Lexington Study Area. Marrett Road (Rte. 2A), Concord Avenue and Spring Streets each carry in excess of 7,000-8,500 vehicles per day.

It is a bit unusual, but the AM peak hour is the typical peak hour of the day at most of the busier intersections. Hayden Street carries the highest proportion of its daily traffic volume during the peak hour of the day, typically the morning peak hour the morning peak hour, where from 14-18% of its traffic volume occurs in a single hour, as indicted by its relatively high K Factor -- the proportion of daily traffic that occurs during the peak hour. This is not unusual for an office/research environment, where people arrive at set times during the AM peak, while leaving at a more dispersed rate during the PM peak. On typical busy arterials, the K factor is often under 0.10. None of the study area streets has a K factor under 0.10, meaning that peak hour

The other streets where the K factor is high include Shade, Lincoln and Middle Streets as well as Cary Avenue. This is typical for streets used as cut-through routes when roads like Marrett or Spring Street become congested. This may be non-recurring because of diversions from I-95, or when construction occurs on Marrett Road.

In addition to traffic volumes, the automatic traffic recorders were used to identify speeds and vehicle classifications.

Table 2, on the page that follows, presents a summary of existing intersection traffic volumes recorded during the traffic count program. From Table 2, the busiest two intersections were on Waltham Street at Concord Avenue and Marrett Road (Route 2A), while the least busy intersection was Lincoln Street at Middle Street, which processed fewer than 300 vehicle trips during the AM peak hour. From 1,100-2,500 vehicle trips entered all of the other study area intersections. The implication is that it is likely that traffic operations, discussed further on, are affected during the peak hours of the day.

Table 2
South Lexington Summary of Peak Hour Intersection Volumes[1]

Signalized Intersection	AM Peak Hour	PM Peak Hour
Waltham Street and Marrett Road	2,555	2,412
Waltham Street and Concord Avenue	2,539	2,226
Spring Street, Hayden Avenue, and Shire Way	2,212	1,925
Spring Street and Marrett Road (Route 2A)	1,699	1,333

Unsignalized Intersection	AM Peak Hour	PM Peak Hour
Hayden Avenue at Waltham Street	2,491	2,303
Marrett Road at Lincoln Street	1,602	1,304
Hayden Avenue at Route 2 Westbound Off-ramp	1,423	897
Concord Avenue at Pleasant Street	1,407	1,001
Spring Street and Shade Street	1,347	1,157
Marrett Road at Cary and Middle Streets	1,128	905
Route 2 Eastbound Ramps at Concord Avenue	1,117	792
Concord Avenue at Walnut Street	1,113	834
Hayden Avenue at Route 2Westbound On-ramp	1,012	1,188
Lincoln Street at Middle Street	278	83

1 - Sorted by AM Peak Hour volumes largest to smallest.
Daily peak hour is highlighted in yellow.

2.3 EXISTING TRAFFIC OPERATIONS

Level of Service (LOS) is an expression of the quality of flow of traffic. LOS is a commonly used and accepted measure of the effectiveness of peak hour traffic operating conditions. It takes into account automobile and truck volumes, roadway width, speed, grade, parking restrictions, pedestrian activity, and traffic control devices. LOS is designated in a range from Level "A", which is the optimal condition where roadway operations are at their best, to Level "F" which indicates excessive delays. Levels "A" through "D" are typically associated with acceptable levels of peak hour traffic operations. At Level "E", the ratio of the approach volume to capacity, or v/c ratio, of an intersection is between 90 and 100 percent of its theoretical capacity. Consistent with the Town of Lexington's current traffic analysis guidelines pertaining to new development, traffic congestion is considered to be excessive at Levels of Service "E" or "F".

All capacity analysis for the study area intersections in South Lexington was performed in accordance with the methodologies set forth in the 2000 Highway Capacity Manual[1] using the SYNCHRO Version 7 software approved , at the time when the Study began, by MassDOT Highway Division[2]. LOS at signalized and unsignalized intersections is based on estimates of delay per vehicle. Table 3 presents a summary of the Level of Service criteria for unsignalized and signalized intersections.

Table 3
Intersection Level of Service Criteria

Level of Service	Unsignalized Delay (seconds/vehicle)	Signalized Delay (seconds/vehicle)
A	≤10	≤10
B	>10 to 15	>10 to 20
C	>15 to 25	>20 to 35
D	>25 to 35	>35 to 55
E	>35 to 50	>55 to 80
F	>50	>80

Source: Highway Capacity Manual, 2000

Table 4 presents a summary of existing traffic operating conditions for the South Lexington study area intersections; trouble spots (LOS E/F) and locations with excessive queuing) are highlighted in yellow.

[1] *Highway Capacity Manual*; Transportation Research Board; 2000
[2] *A Guide on Traffic Analysis Tools*, MassDOT, February 2011

Table 4
South Lexington Intersections – 2013 Traffic Operations

Signalized Intersections						
	2013 AM			*2013 PM*		
Intersection Tracking Number and Street Names	***Delay***	***LOS***	***V/C***	***Delay***	***LOS***	***V/C***
Concord Avenue at Waltham Street	2+ min	F	1+	2+ min	F	1+
Waltham Street at Marrett Road (Route 2A)	56.6	E	1+	91.1	F	1+
Hayden Avenue at Spring Street & Shire Rd	2+ min	F	1+	62.3	E	0.9
Marrett Road (Route 2A) at Spring Street	91.8	F	1+	36.4	D	0.81
Signalized Intersections With Optimized Signal Timing						
Intersection Tracking Number and Street Names	***Delay***	***LOS***	***V/C***	***Delay***	***LOS***	***V/C***
Concord Avenue at Waltham Street	2+ min	F	1+	2+ min	F	1+
Waltham Street at Marrett Road (Route 2A)	57.5	E	1+	51.7	D	0.96
Hayden Avenue at Spring Street & Shire Rd	37.6	D	0.94	45.4	D	0.9
Marrett Road (Route 2A) at Spring Street	90.4	F	1+	35.9	D	0.83
Concord at Spring Street	45.2	D	1+	63.4	E	1
Unsignalized Intersections						
	2013 AM			*2013 PM*		
Intersection Tracking Number and Street Names	***Delay***	***LOS***	***V/C***	***Delay***	***LOS***	***V/C***
Concord Avenue at Walnut Street	45.5	E	0.66	18.1	C	0.39
Concord Avenue at Pleasant Street	2+ min	F	1+	67.4	F	0.94
Concord Avenue at Spring Street	2+ min	F	1+	2+ min	F	1+
Concord Avenue at Route 2 Eastbound Ramps	31.7	D	0.84	13	B	0.35
Shade Street at Spring Street	66.3	F	0.82	16.8	C	0.26
Hayden Avenue at Route 2 Westbound On-Ramp	8.9	A	0.17	10.2	B	0.27
Hayden Avenue at Route 2 Westbound Off-Ramp LT	82.1	F	1+	17	C	0.25
Hayden Avenue at Route 2 Westbound Off-Ramp RT	11.9	B	0.48	15.4	C	0.44
Hayden Avenue at Waltham Street	2+ min	F	1+	2+ min	F	1+
Lincoln Street North at Marrett Road (Route 2A)	13.9	B	0.37	11.9	C	0.18
Lincoln Street South at Marrett Road (Route 2A)	2+ min	F	1+	2+ min	F	0.93
Middle Street at Cary Avenue	9.9	A	0.09	9.8	A	0.09
Lincoln Street at Middle Street	13.1	B	0.23	8.7	A	0.02
Marrett Road (Route 2A) at Cary Avenue	23.5	C	0.16	18.3	C	0.18
Middle Street at Marrett Road (Route 2A)	13.7	B	0.08	10.7	B	0.05
Delay expressed in seconds per vehicle during peak 15 minutes of the peak hour. At high congestion, delay and V/C calculations are unreliable.						
LOS - Level of Service from A-F; A is best; F is worst						
V/C - Calculated Volume to Capacity ratio. Since counted volumes were actually processed, the true capacity has to be less than 1.						
Problem intersections with calculated LOS E/Fconditions are highlighted in yellow						

From Table 4, of the signalized intersections, most are operating with excessive delays (i.e., LOS E/F) during both the AM and PM peak hours. Only the signalized intersection of Marrett Road at Spring Street is not operating with congestion during the PM peak hour. Because three of the signalized intersections have recently been upgraded, we checked to see if simple timing or phasing modifications could result in better or acceptable traffic operations in the levels of service A-D range, and have also included these results on Table 4.

While Concord Avenue at Waltham Street remains a significant problem intersection, acceptable operations at Hayden Avenue, Spring Street, and Shire Way are possible, as well as improvements to the Marrett Road at Waltham Street intersection during the PM peak hour.

Additionally, the new signal at Concord and Spring Streets, also analyzed on Table 4 with existing recorded volumes, should allow it to operate acceptably during the AM peak hour.

At the unsignalized intersections, several side street approaches to streets that have the right of way, like Waltham Street, Spring Street, Concord Avenue, and Marrett Road, are operating with congestion, particularly during the AM peak hour.

To summarize, of the intersections counted, 58% were operating with congestion during the morning peak hour, while 37% were operating with congestion during the evening peak hour.

Analysis results were found to be generally consistent with on-site observations.

Refer to the Technical Appendix for detailed AM and PM peak hour analysis results.

2.4 CRASH HISTORY

In addition to reviewing traffic operating conditions within the study area, FST also investigated recent South Lexington crash trends. As part of this effort, the crash history for the study area intersections were investigated for the five-year period of 2006, 2007, 2008, 2009, and 2010 from the MassDOT database.

Table 5 on the page that follows summarizes the crash types, severity, and crash rates occurring at the intersections in the study area over this five-year period. Figure 6 provides an illustration of the locatable crashes from Table 5, segmented by angle, rear-end, pedestrian, and bicyclist crash types.

Although the number of crashs alone is important, the actual exposure or potential for an individual driver being involved in an crash is reflected in the crash rate. The crash rate is defined as the number of crashes per million entering vehicles (MEV) at an intersection.

MassDOT intersection crash rate summary sheets are provided in the Appendix to this report. Using MassDOT's Crash Rate Worksheets, seven of the analyzed intersections have crash rates high than MassDOT's Statewide/District 4 crash rates of 0.61/0.57 crashes per million entering vehicles for unsignalized intersections or 0.81/0.77 crashes per million entering vehicles at signalized intersections. The unsignalized intersections are:

- Concord Avenue at Walnut Street (0.72 rate)
- Hayden Avenue at Waltham Street (1.00 rate)
- Concord Avenue at Spring Street (0.69 rate)
- Marrett Road (Rte. 2A) at Middle Street and Cary Avenue (0.79 rate).
- Marrett Road at Lincoln Street (1.02 rate)
- Middle Street at Lincoln Street (1.98 rate)

The signalized intersection of Marrett Road (Rte. 2A) at Waltham Street, with a calculated five-year crash rate of 0.91, also exceeds District and Statewide average crash rates of 0.81/0.77 crashes per million entering vehicles. This intersection has been improved recently to help address crashes and it is anticipated that its future crash rate will be lower than that realized between 2006-2010.

Table 5

South Lexington Study Area Crash Data Summary 2006-2010

Intersection	Concord Ave./ Pleasant St.	Concord Ave./ Waltham St	Concord Ave./ Walnut St	Hayden Ave & Waltham St	Concord Ave & Spring St	Hayden St & Waltham St	Hayden Ave & Spring St	Hayden Ave & Re 2 WB	Marrett Rd & Spring St	Marrett Rd & Middle St/ Cary Ave	Marrett Rd & Lincoln St	Spring St & Shade St	Middle St & Lincoln St	Kendall Rd & Marrett Rd	Concord Ave & Route 2 EB	Hayden/Waltham at Rte 2 WB/Exit 53B	Waltham St & Rte 2 EB Ramps	Waltham St & Marrett Rd
Year																		
2006	2	12	2	16	4	9	2	0	4	2	4	0	0	2	0	1	1	16
2007	5	8	1	8	5	10	4	0	4	5	4	0	1	1	0	0	1	8
2008	1	6	2	9	6	13	3	2	3	3	7	0	2	4	2	1	0	9
2009	0	3	3	4	1	4	3	2	0	0	5	0	0	1	2	0	0	4
2010	0	3	3	5	6	5	5	0	4	3	3	0	0	3	2	1	0	5
Total	8	32	11	42	22	41	17	4	15	13	23	0	3	11	6	3	2	42
Collision Type																		
Angle	3	17	3	14	11	8	11	1	3	1	10	0	1	7	1	1	0	14
Head-on	1	0	0	0	0	0	0	0	0	6	2	0	0	0	0	0	0	0
Rear-end	0	12	2	17	3	21	1	3	6	2	9	0	1	1	3	2	2	17
Sideswipe	2	0	0	2	2	4	1	0	0	1	1	0	0	1	1	0	0	2
Single Vehicle	2	3	6	6	4	4	3	0	5	1	1	0	1	2	1	0	0	6
Unknown	0	0	0	3	2	4	1	0	1	2	0	0	0	0	0	0	0	3
Total	8	32	11	42	22	41	17	4	15	13	23	0	3	11	6	3	2	42
Severity																		
Properity	6	28	8	27	18	28	12	2	8	6	15	0	3	8	3	2	2	29
Injury	2	3	3	11	2	13	5	2	4	7	7	0	0	3	3	1	0	11
Fatality	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	1	0	4	2	0	0	0	3	0	1	0	0	0	0	0	0	2
Total	8	32	11	42	22	41	17	4	15	13	23	0	3	11	6	3	2	42
Weather																		
Clear	6	25	5	27	13	29	9	2	8	9	13	0	1	7	5	2	1	27
Cloudy	1	6	2	4	5	6	5	2	4	3	6	0	1	1	0	0	0	5
Fog	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ice	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rain	0	1	0	8	2	3	2	0	2	1	2	0	1	2	0	0	0	7
Snow	1	0	3	3	2	2	0	0	0	0	2	0	0	1	0	1	1	3
Unknown	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	0	0	0
Total	8	32	11	42	22	41	17	4	15	13	23	0	3	11	6	3	2	42
Time of Day																		
7:00 am to 9:00 am	2	4	3	10	6	6	4	1	3	3	5	0	0	5	1	0	0	10
9:00 am to 4:00 pm	2	18	4	19	6	15	5	0	4	5	8	0	0	5	3	2	1	19
4:00 pm to 6:00 pm	1	3	0	4	7	6	5	2	2	1	7	0	1	0	0	0	1	4
6:00 pm to 7:00 am	3	7	4	9	3	14	3	1	6	4	3	0	2	1	2	1	0	9
Total	8	32	11	42	22	41	17	4	15	13	23	0	3	11	6	3	2	42
Crash Rates																		
State	0.61	0.81	0.61	0.81	0.61		0.81	0.61	0.81	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.81
District	0.57	0.77	0.57	0.77	0.57		0.77	0.57	0.77	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.77
Intersection	0.44	0.57	0.72[1]	1.00[1]	0.69[1]	1.00	0.48	0.20	0.62	0.79[1]	1.02[1]	0.00	1.98[1]	0.40*	0.42	0.18	0.05	0.95[1]

Crash data source: MassDOT /Mass Registry reported data. Data represents only reported crashes and not all crashes are reported.

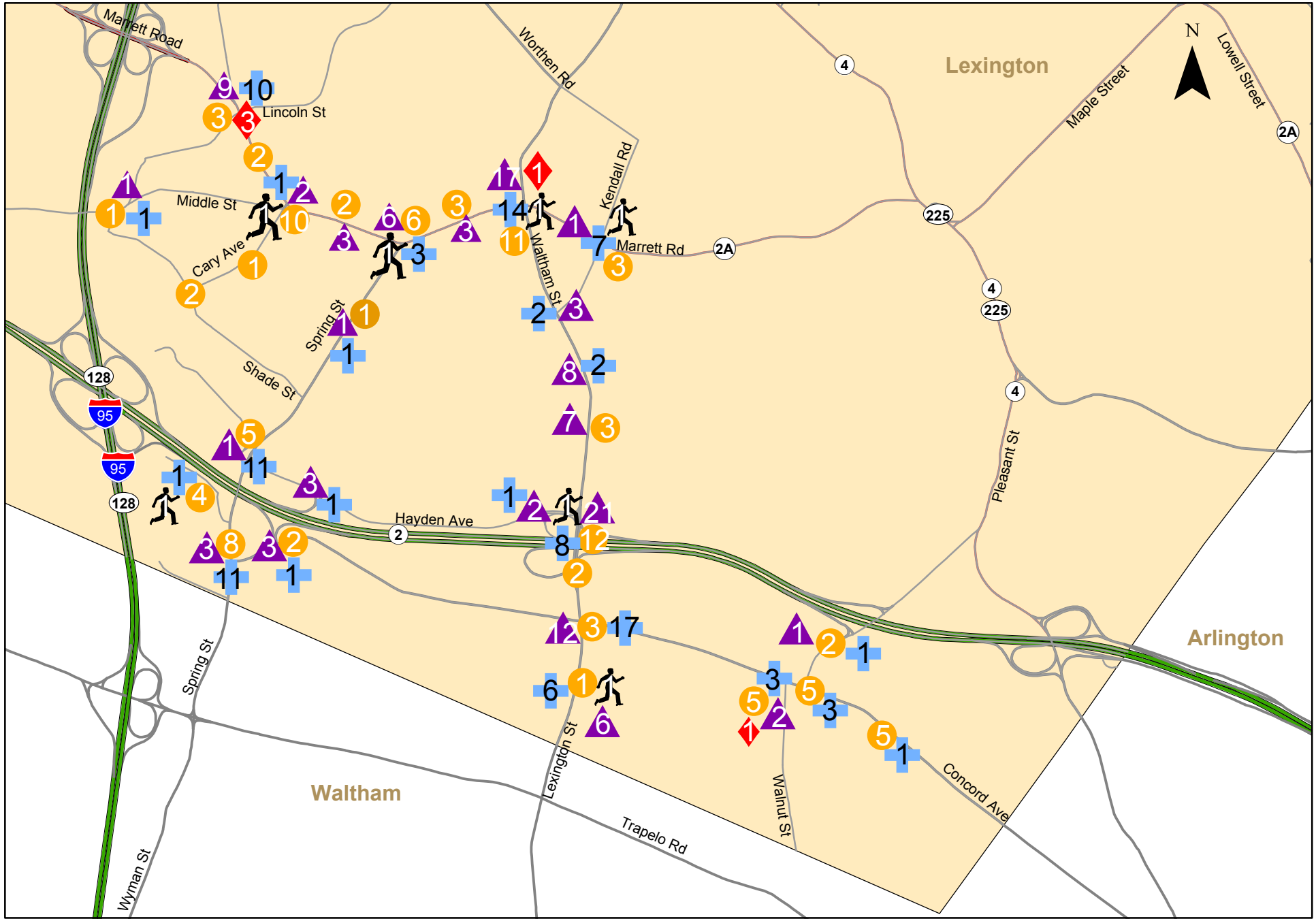


Figure 6
South Lexington Transportation Study
2006-2010 Crashes

2.5 PUBLIC TRANSPORTATION SERVICES

The South Lexington study area is served by MBTA bus routes on Marrett Road (Route 2A) and the LEXPRESS Service. MBTA Routes #62 and #76 service the Alewife Station and connect with LEXPRESS, primarily in Lexington Center. These services are illustrated on Figure 7. LEXPRESS has been serving Lexington since 1979 and is one of the oldest suburban transit systems in Eastern Massachusetts. It provides a fixed route minibus service between Lexington's neighborhoods, Town services, and shopping centers. It is funded by the Town of Lexington by contributions through traffic mitigation agreements with adjacent businesses and the MBTA. LEXPRESS buses are equipped with wheelchair lifts and are ADA compliant. In addition, all LEXPRESS shuttles now carry bike racks. LEXPRESS services are based on typical 1-hour headways.

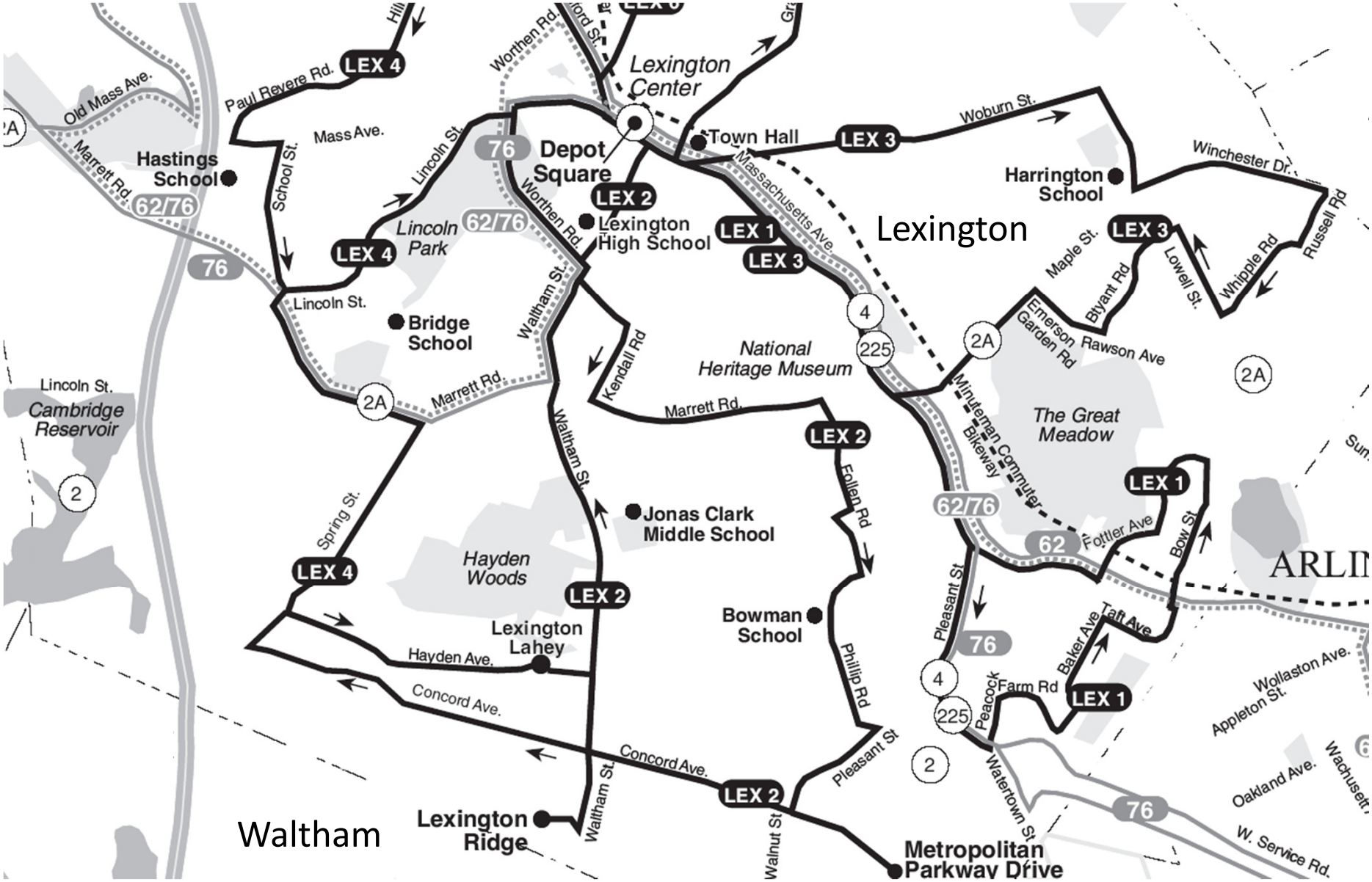
Other public and private services are also available. Residents who are 60+ years of age or have a disability may also arrange to use the Lex-Connect, a door-to-door reduced fare taxi ride program.

In addition, there are also private shuttle services operating in the area, such as through the 128 Business Council. This weekday shuttle services the South Lexington area (Route A) with termini between Wyman Street in Waltham and Alewife Station in Cambridge. This service was originally established in 1985 with non-member rides presently at $5 and discounts fares provided for employees/tenants. During the morning period, the headways are approximately every 20+/- minutes and during the evening periods headways are about once an hour.

2.6 SIGNALIZED PEDESTRIAN CROSSING LOCATIONS

Scattered in the South Lexington study area are three (3) locations where the Town has installed signalized pedestrian crossing warnings. These locations are in addition to the pedestrian accommodations at the six (6) signalized intersections in the study area, which all include pedestrian activation. The three (3) additional locations where signalized pedestrian warning devices are provided are:

- Waltham Street (south of Brookhaven and Avalon), at the Waltham City Line (see left);
- Spring Street, north of Hudson Road; and
- Spring Street, north of Underwood Avenue.



Source: MBTA

South Lexington Transportation Study

Existing MBTA and LEXPRESS Services

Figure 7

Waltham Street, in the area of the Brookhaven and Avalon residential developments is a relatively straight 4-lane roadway with sidewalks on both sides of the street. Given that the pedestrian activity from the two residential developments will be attracted to the commercial activity on both sides of the street, an overhead, cantilever flashing beacon unit was determined to be best system for this section of roadway because of its visibility. A sign at the pedestrian push button reads "Wait for vehicle to stop before crossing". This system is a warning device and not a regulatory crossing device.

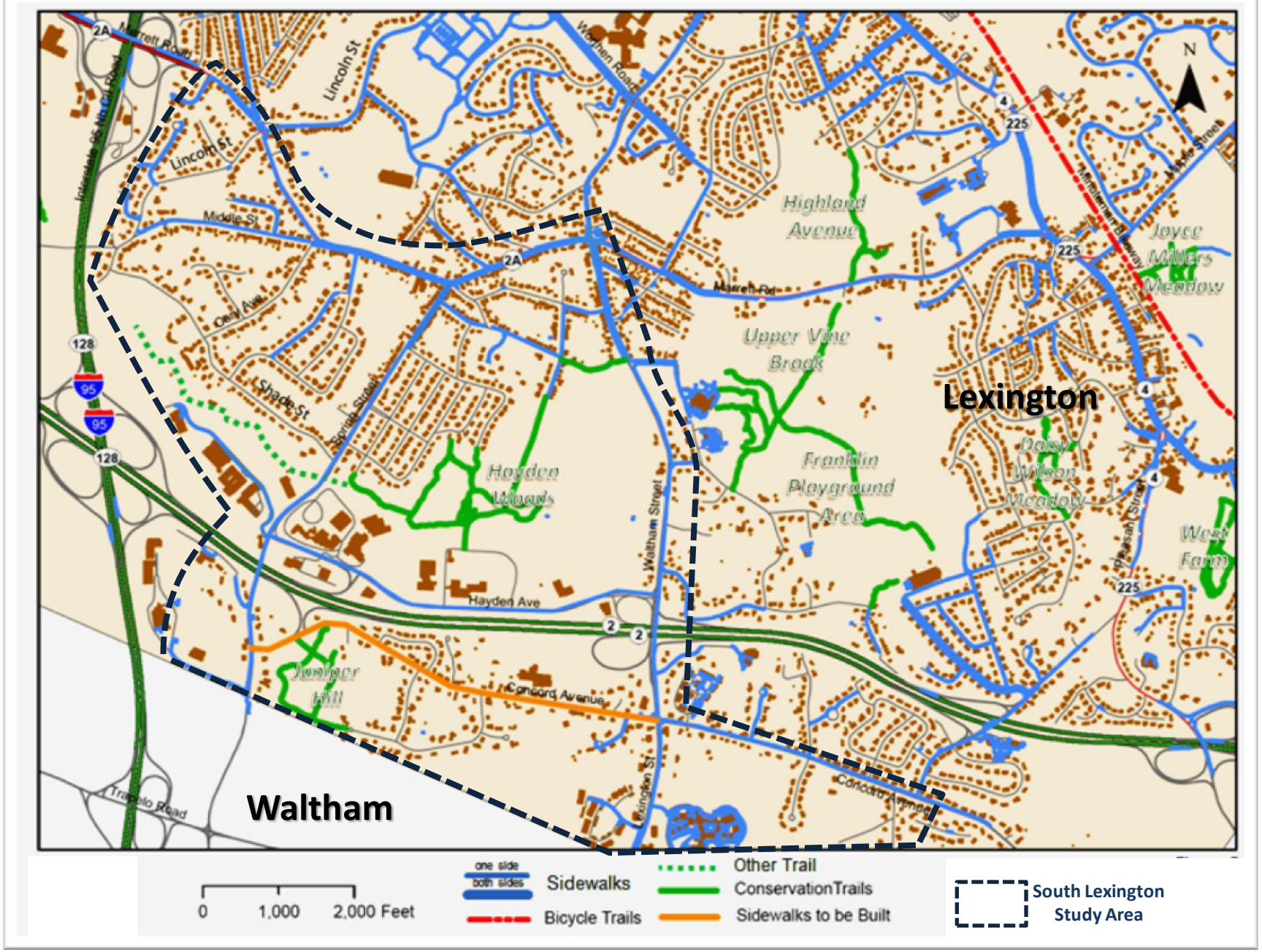
The two pedestrian warning devices on Spring Street were erected when the sidewalk project was constructed in 2010-2011. This new sidewalk was constructed on the west side of Spring Street and serves the residences on the east at locations where the pedestrian activity appears to be the greatest. The flashing yellow warning lights are triggered by a pedestrian activating the push button. Like Waltham Street these are warning devices and not regulatory crossing devices.

2.7 TRAIL CROSSING LOCATIONS

Figure 8 illustrates existing sidewalks and trails within South Lexington. Figure 9 illustrates existing South Lexington bicycle crossing problem areas identified on a base map by the Lexington Bicycle Committee.

There are many sidewalks and off-road pedestrian walking and biking trails in theSouth Lexington area. Many of them are uncontrolled or unaccommodated. Noted above in Section 2.6 are references to the controlled locations. The "Across Lexington" program, encourages walking and hiking across parts of Lexington through a network of routes including conservation lands, recreational areas, general open space, school zones and roadway systems. Currently two major routes are identified on the web site (www.acrosslexington.org), one of which (Route B) covers a portion of the South Lexington area. This organization is an initiative of the Lexington Greenways Corridor Committee.

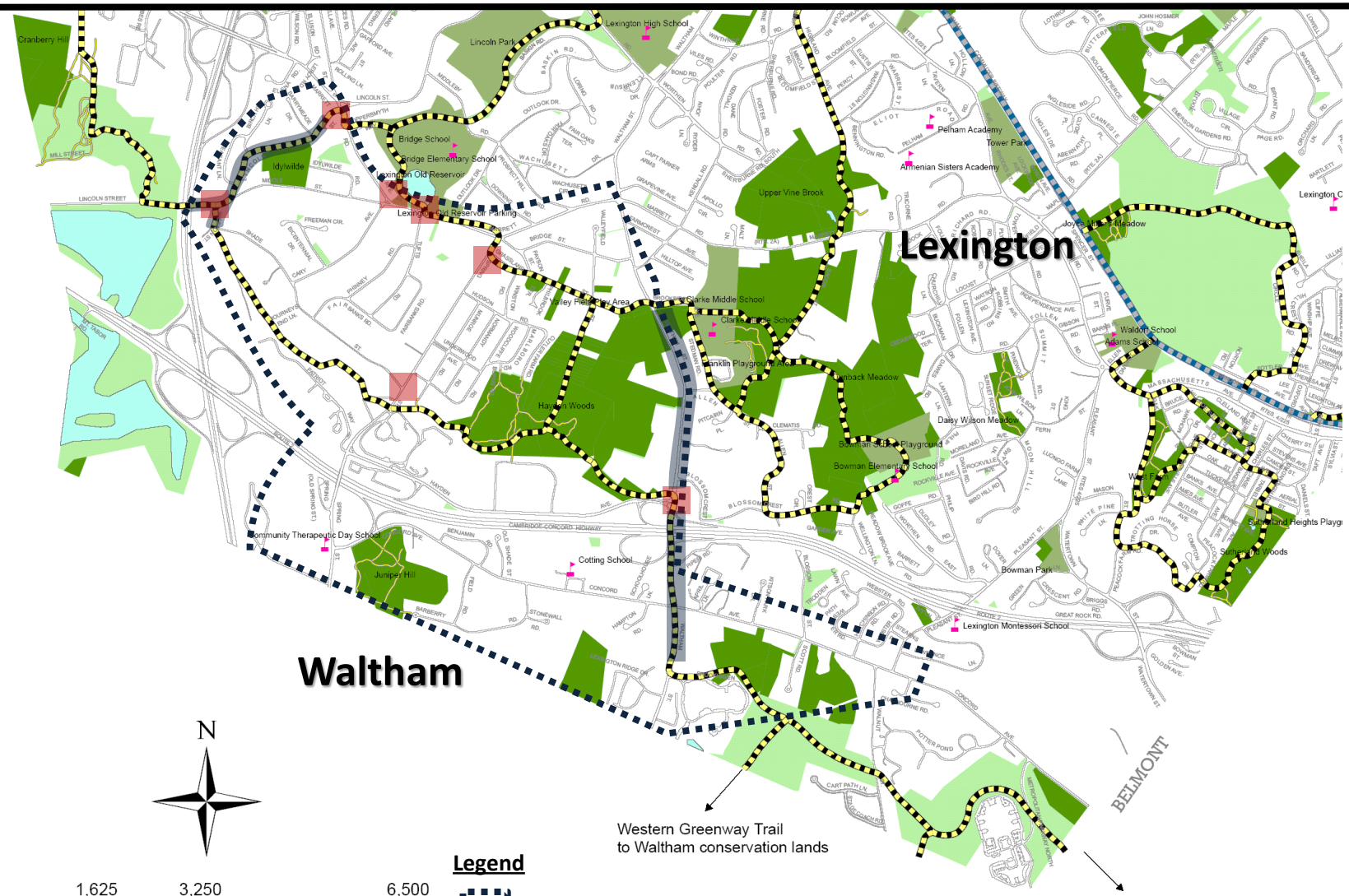
The Greenways Corridor Committee also coordinates with the Western Greenway, which is a walking/hiking path, parts of which are improved and unimproved, and passes through the Towns of Belmont, Lexington and Waltham. The Lexington portion of the Western Greenway crosses Walnut Street, just south of Potter's Pond Condominiums.



South Lexington Transportation Study

Existing South Lexington Sidewalks and Trails

Figure 8



Data provided by the Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs and the Town of Lexington. The information is provided as a reasonably accurate point of reference, but is not intended to represent authoritative location. The Town of Lexington shall not be held responsible for the accuracy or misuse of these data.

Base Map Source: Lexington Bicycle Committee

South Lexington Transportation Study

Existing Bike Crossing Issues Summary

Figure 9

2.7 TRAIL CROSSING LOCATIONS (Continued)

With the current Across Lexington Routes, there may be considerations for improving crossing public ways to provide safe crossing for bikers and hikers and facilitate pedestrian connections.

Locations in the South Lexington area that should be considered include:

- Spring Street near Shire (e.g., at its intersection with Shade Street;
- Spring Street, near Grassland Street;
- Waltham Street near Brookside Avenue;
- Waltham Street near Hayden Avenue and
- Walnut Street, south of Potter Pond Road.

At the Spring Street crossing near Shire, there presently is a vehicle speed warning device in place, but no marked crossing area or signing. Some crossing locations could benefit from improved sight lines along the roadways, vegetation trimming, etc., to alert motorists of possible crossing activity. There are numerous measures to improve crossing locations, many of which the Town is currently utilizing in other parts of Town. Many of these should be considered in the South Lexington network of trails and paths.

The Town is very active is developing bicycle connections throughout Town. The most popular bicycle facility is the Minuteman Commuter Bikeway. While the Town has been proactive in accommodating bicycles such as the addition of bike lanes on Hayden Avenue and the addition of shared lane markings (sharrows) on Spring Street, there are other network opportunities. Locations in the South Lexington area that should be considered for bicycle connections or improved connections include:

- Waltham Street;
- Marrett Road;
- Spring Street south;
- Concord Avenue; and
- Lincoln Street.

3. TRAFFIC MITIGATION MEASURES

3.1 TRAFFIC MITIGATION AGREEMENTS

The Town of Lexington has been very diligent in negotiating mitigation measures as developments are being implemented. This section provides an overview of the status of earlier mitigation measures that have been approved. In many cases, police control of intersections has been replaced with signalization. Following is a summary of approved traffic mitigation by location.

Mitigation Measures Source	**Measures**	Agreement Date
MOU w/ Town of Lexington	1) $35,000 for traffic master plan for Hayden and Spring corridors	Last revised 4/27/2009
Three Ledgemont Center	2) $500,000 Traffic Mitigation including participation in:	
	Traffic signal Spring/Hayden	
	Design/construct sidewalks and Spring Street Traffic calming	
	Design/construct sidewalks along Hayden Avenue	
	Design/construct improvements or signal at Waltham/Hayden Avenue	
	Design/construct improvements or signal at Marrett Road/Spring Street	
	3) A 'No left turn Mon-Fri 7-9 AM facing southbound Spring Street traffic	
	A 'No left turn Mon-Fri 4-6 AM facing Ledgemont/Spring Street traffic	
	$200,000 for TDM/Public Transportation stabilization fund	

Mitigation Measures Source	**Measures**	Agreement Date
MOU w/ Town of Lexington	1) $65,000 for assisting Town with traffic master plan	Last revised 10/30/2009
Patriot Way LLC	2) $15,000 for assisting Town with design/construction of traffic calming on Shade Street	
	3) $500,000 Traffic Mitigation including participation in:	
	Design/construct traffic calming devices on Shade Street	
	Design/construct traffic signal at Spring Street/Hayden Avenue intersection	
	Design/construct new traffic signal at Spring Street/Concord Avenue	
	Design/construct sidewalks along Hayden Avenue	
	Design/construct improvements or signal at Waltham/Hayden Avenue	
	4) $100,000 for TDM/Public Transportation stabilization fund	
	Additional Traffic Mitigation: Provide Grant Application assistance	
	Supplemental Tax Increment Financing language	
	Appoint Transportation Coordinator	
	Sustainable Design/Construction	

Mitigation Measures Source	**Measures**	Agreement Date
Lahey Medical PSDUP	Provide tenants w/CARAVAN and available LEXPRESS Public Transportation including handicapped accessibility services	Last revised April 8, 1997
	Contribute $4,000 annually to LEXPRESS operations for 10 years (expired 2007)	
	Tenant assistance with at least half public transportation pass costs	
	Provide two bike racks (type not specified) one on site and one under the building	
	Annual reporting upon request of Town's Transportation Coordinator	
	Re-grade to increase the sight line a Hayden/Waltham Street ramp from 35 to 400 feet	
	Improve Route 2 signage to Hayden Avenue to place a 'right turn only' sign without hazardous cross-over to Hayden Avenue	
	Adopt an Island' to landscape or maintain the right turn channelization island at Hayden Avenue/Waltham Street	
	Initially, mitigation cost sharing is to be determined by adding up the ITE Trip Generation trips and dividing by participating owners	

Mitigation Measures Source	**Measures**	Agreement Date
Cubist Pharmaceuticals Amended MOU	1) $25,000 for traffic master plan for Hayden and Spring corridors	Last revised October 21, 2009
	2) Traffic Mitigation including $1,900 per parking space added, including$204,900 for the first 121 spaces, $190,000 for the next 100 spaces. Potential funding uses may include:	
	Traffic signal Spring/Hayden	
	Traffic signal at Spring Street/Concord Avenue	
	Design/construct sidewalks along Hayden or Concord Avenues	
	Design/construct improvements or signal at Waltham/Hayden Avenue	
	Create corridor pedestrian plan for area pedestrian movements	
	Additional Traffic Mitigation: Provide Grant Application assistance	
	Appoint Transportation Coordinator	

Mitigation Measures Source	**Measures**	Agreement Date
Cubist Pharmaceuticals Amended PSDUP	On-going Route 128 Business Council Member	Last revised October 5, 2009
	Provide Transportation Coordinator at 65 Hayden Avenue	
	Central listing of alternative transportation services	
	Provide showers, lockers, and exercise equipment to encourage bicycle commuting	
	Provide an annual $4,000 contribution to LEXPRESS operations	
	Provide essential on-site services (cafeteria, fitness, massage, dry-cleaning, and mail boxes) to internalize trip making as much as possible	
	TDM plan has reduced on-site trip making by 27% compared to ITE R&D and 10% lower than ITE Office rates	
	Option to make lump sum $80,000 payment to satisfy continuing monetary obligations (note: Appendix F with traffic mitigation details is missing).	

Mitigation Measures Source	**Measures**	Agreement Date
Appendix 3: TDM 95/99 Hayden Ave and 124/128 Spring Street	Provide less parking at 3.2 spaces per 1,000 SF net area to encourage car sharing	December 22, 2008
	Encourage and provide infrastructure for telecommuting	
	Encourage staggered work hours	
	Encourage tenant internet use for online banking and shopping	
	Seek a preferred vendor for car rentals, zip car, U-car Share	
	Guaranteed ride home for employees using Alewife Shuttle	
	Preferred parking for low-emitting vehicles	
	secure bike racks accommodating approx. 40 bikes	
	financial incentives for bike use including on-site bike sharing	
	financial contribution to Town for designing and constructing pedestrian and bike infrastructure	
	Member of 128 Business Council TMA	
	For first three years, annual reporting of modal use for plus arrival/departure times summarized and provided to Lexington's Transportation Coordinator	
	Member of local ozone awareness program	
	On-site cafeteria for employees	
	basic business operations support to reduce trip making (e.g., ATMs	

Mitigation Measures Source	**Measures**	Agreement Date
Appendix 4: Mitigation 95/99 Hayden Ave and 124/128 Spring Street	Determine through Town discussions an amount to provide assistance with:	December 22, 2008
	Design/construction of signal improvements at Marrett Road/Spring Street	
	Design/construction of sidewalks along Spring Street	
	Design/construction of sidewalks along Hayden Avenue	
	Design/construction of improvements or signal at Waltham/Hayden Avenue	
	Design/construction of traffic signal at Spring Street/Hayden Avenue intersection	
	Provide assistance to Town in seeking grants for Mass Opportunity Relocation and Expansion (MORE)/Public Works Economic Development Grant (PWED) and Infrastructure Investment Incentive (I-Cubed) programs offered by Massachusetts	

4. IMPLICATIONSOF EXISTING AND APPROVED DEVELOPMENTS

RKG Associates has assisted the FST team with determining the likely build-out of the corridor (study area) over the next decade from a real estate perspective. Summarized below are key findings of RKG's research to date for the South Lexington Transportation Study. Various tables and figures referenced in the text are attached at the end of this document.

4.1 BASELINE CONDITIONS IN SOUTH LEXINGTON

The Study Area is primarily built-out and the supply of under-developed or undeveloped, commercially zoned land is very limited.

Illustrated on Figure 2 on Section 1, the Study Area has 10 major properties containing 217 acres, improved with 2.03 million square feet (SF) of building area, mixed between office (54%) and office/laboratory (46%). (See Table 1) From a tax base perspective, the Study Area ($344 million) accounts for 40% of the Town's commercial/industrial assessment in FY-2012.

Two projects totaling an additional 542,000 SF have been approved, and are likely be built within the next two to five years since they are proposed for specific end users. When completed, the net FAR in the Study Area would be 0.29, almost twice the 0.15 allowed in the CRO zoning district.

4.2 ECONOMIC CONDITIONS

In 2011, average employment in Lexington (19,410) was essentially the same as in 1989 (19,430) and 10% lower than a peak in 2000 (21,600). Lexington lost about 1,000 jobs over the recession (2008/09 to 2010), and only recovered about 13% of the job losses by 2011. Employment in Lexington over the last decade has not recover to the prior peak in 2000/2001 (See Figure 1); nor has employment levels in the region or the Commonwealth (See Figure 2).

Lexington is home to 11 of the 200 major employers (6%) in the Metro South/West Workforce Investment Area. (See Table 2) MIT Lincoln Laboratory, which employees over 1,000 persons, is one of the region's 34 employers of this magnitude (3%). The ten other Lexington companies each provide between 250 and 500 jobs, and account for 8% of those size companies in the region. Half of these companies are in the South Lexington Study Area.

In 2012 (1st quarter), the Town of Lexington was an importer of labor, as local businesses employed 19,270 persons in comparison to a resident labor force of 15,460 persons. This is further exacerbated by the fact that 25% of the Town of Lexington's labor force was actually employed by Lexington businesses, with the remaining 75% were commuting out-of-town for work, which increases commuter traffic volumes. In-flow/out-flow commuting data in 2000 indicated that businesses in Lexington drew a higher concentration of employees from a broader region than where Lexington residents commuted. (See Table 3)

The economic strengths of Lexington and the region are tied to the high-tech, life-science, and information industry clusters and less so to education, trade, leisure and hospitality, and other services (See Table 4 and Table 5).

Statewide 10-year employment forecasts indicate that Lexington could potentially capture between 2,800 and 4,300 new jobs over that period based on its percentage of statewide employment. Professional and Business Services would account for 41% to 46% of this growth, while Education and Health Services would account for another 27% to 32%. Employment growth is also forecasted in Manufacturing, and 19% of that growth may occur in the Pharmaceutical, or Computer and Electronic Product subsectors. (See Table 6)

4.3 MARKET CHARACTERISTICS

Cubist Pharmaceuticals and Shire HGT have dominated the market in South Lexington by setting high prices with their property acquisitions ($53.5 million and $165 million respectively). This was followed by a recent purchase of 95 Hayden for $44.69 million, or over $220 per square foot,

and includes a new building for VistaPrint which recently received approval for a TIF.

Single-tenant or owner-occupants such as Lahey Clinic, VistaPrint, Stride Rite, Shire HGT, and Cubist are the predominant type in the Study Area. Boston Properties, Inc. has a controlling interest in five of the properties in the Study Area as well as others in the Hartwell Corridor and nearby in Waltham.

Currently 165,000 SF of office and lab space is available in the Study Area which indicates an 8% availability rate for all buildings, or 23% based on tenant-occupied buildings. Rental pricing ranges from the mid $20s to low $30s for office (gross), and mid-to-high $30s for lab space ($/SF).

The Route 128 West submarket had a vacancy rate (multi-tenant) of 16%, which based on a supply of 21.93 million SF indicates that over 3.5 million SF was available. Lexington, with 2.97 million SF (7% of the region), had an 18.6% vacancy rate indicating 0.56 million SF available. [1]

Office rental rates in the region average $30.50/SF, and $28/SF in Lexington or 8% lower. Pricing in Waltham averages over $31/SF, likely reflective of a more modern supply than is evident in Lexington.

Field research indicated that the Hartwell Avenue corridor had a higher amount of available space than the Study Area, and the recent up-zoning to a 25% FAR has created renewed interest from developers, which would present an alternative location for businesses looking at South Lexington. Also, future BRAC decisions regarding the Hansom Air Field may create additional opportunities there.

Over 0.57 million SF of office space was absorbed in the Route 128 West sub-market over the last year. This includes nearly 80,000 SF in Lexington. These are positive indicators especially in light of the negative absorption over the previous two or three years. New office building construction is only aimed at specific end-users, as owners/developers take advantage of low interest rates.

1 Source: Richards Barry Joyce & Partners (Summer 2012)

A United States Postal Service (USPS) distribution center is located on Spring Street in Waltham, outside the Study Area. If this property becomes surplus in the future with the reported downsizing at USPS, it would present a good redevelopment site for a more intense use, and generate additional traffic.

4.4 DEVELOPMENT IMPLICATIONS FOR SOUTH LEXINGTON

RKG's findings suggest the market is improving, but a high amount of available supply remains, not only in the region but also in Lexington. From a locational perspective, the Study Area appears to be a better choice than other areas in Lexington, although the available supply of under-developed sites or vacant land is very limited.

In RKG's opinion, the approved buildings in the Study Area should be completed within 3 to 5 years if not sooner, since each is a specific end-user building. When these buildings are completed, the Study Area would have 2.57 million SF of building area and the net FAR would increase to 0.29, or almost twice that allowed in the Commercial Regional Office (CRO) zoning district (0.15).

Assuming a town goal for the future is to increase net FAR in the district to perhaps 30%, there would only be three properties where an potential increase may occur, those being 18 Spring Street, 191-201 Spring Street, and 92-100 Hayden Avenue where current net FARs are 0.21 or lower. An Increase in density at these three properties would result in about 200,000 SF to 250,000 SF of additional gross building area, especially if a 4-acre vacant site, zoned residential, was included in the calculations.

However, expansion on the Spring Street sites may not be possible due to topography and ledge, according to the property representative. Therefore, 92-100 Hayden Drive (additional 32,500 SF) would remain and likely represent a tear-down of existing buildings. Because it would require new DDR legislation, it is unlikely that the excess development potential from the Spring Street sites could be transferred to Hayden Avenue during the next 10 years to allow an additional 100,000 SF and effectively increasing its density to a 0.5 FAR.

During late 2012, the interviewed representative from Boston Properties was more interested in re-tenanting their empty building at 33 Hayden Avenue, and up-zoning along Hartwell Avenue, in order to reposition one of their holdings there.

Table 6 - South Lexington Study Area: Parcels Characteristics

Address	Zoning	Gross Acres	NET Acres [1]	# of Bldgs	Total Bldg SF	NET Bldg SF [2]	NET FAR	GARAGE SF	ASPHALT SF	Total Assmt
191-201 SPRING ST	CRO	24.2	24.2	2	282,715	226,172	0.21	126,812	264,600	$29,987,000
181 SPRING ST	CRO	6.8	6.8	1	56,442	45,154	0.15		30,500	$7,101,000
16 HAYDEN AVE	CD-8	2.1	2.0	1	30,496	24,397	0.28	47,796		$4,428,000
33 HAYDEN AVE	CRO	6.6	4.0	1	84,283	67,426	0.39		115,500	$9,652,000
45,55 & 65 HAYDEN	CD-9	37.4	27.3	4	393,225	296,180	0.25	180,000	308,320	$72,555,000
80 HAYDEN AVE	CRO	1.9	1.0	1	43,536	34,829	0.79	29,831	22,500	$4,917,000
92-100 HAYDEN AVE	CRO	6.3	6.3	2	72,014	57,611	0.21		10,000	$10,433,000
95 HAYDEN AVE (2 Ledgemont)	CRO	25.0	16.1	1	200,343	160,274	0.23	48,600	20,000	$27,101,000
124 SPRING ST (1 Ledgemont)	CRO	11.3	11.3	5	183,901	147,121	0.30			$23,508,000
125 SPRING ST; 200-500 SHIRE WAY [3]	CD-10	95.6	59.6	5	683,034	502,555	0.19		967,500	$154,738,000
TOTAL (Existing)		217.2	158.7	23	2,029,989	1,561,719	0.23	433,039	1,738,920	$344,420,000
APPROVED BUT NOT BUILT										
97 HAYDEN (3 Ledgemont)	CRO			1	162,000	129,600	0.41	Unk	Unk	
100 & 600 SHIRE WAY [3]	CD-10			2	380,000	304,000	0.31	500,000	Unk	
TOTAL (At Build-Out)		217.2	158.7	26	2,571,989	1,995,319	0.29	933,039		

[1] Developable acres per D/PSDUPs and Lexington Commercial Zone Analysis & Build-Out Study (Cecil & GLC)

[2] 80% of gross building area, excluding garage structures, per Lexington Zoning Regulations

[3]Developable acres are 77.1, and net FAR would be 0.25 with addition; however, 59.6 NET acres reflects a 36-acre conservation easement deducted from gross

Source: Town of Lexington; Vision Solutions; & RKG Associates, Inc.

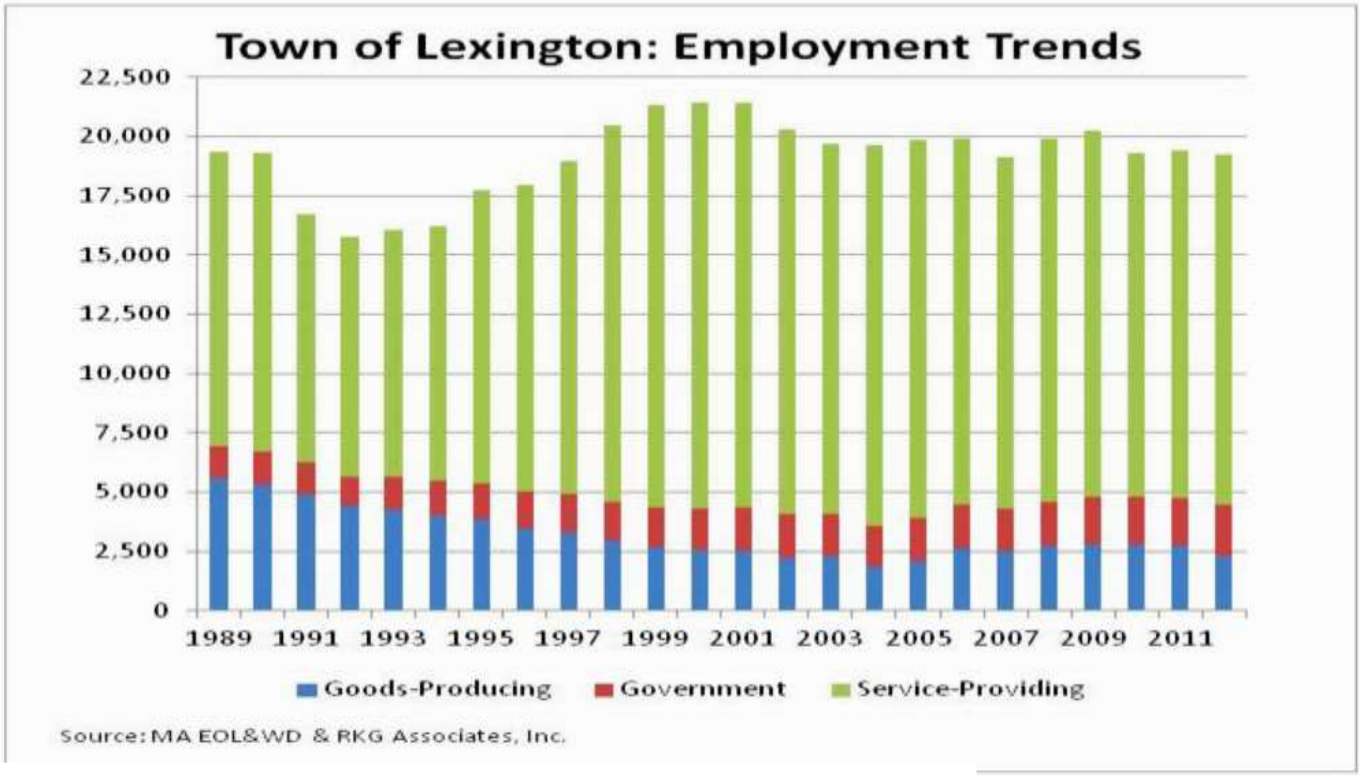


Figure 10 – Town of Lexington Employment Trends

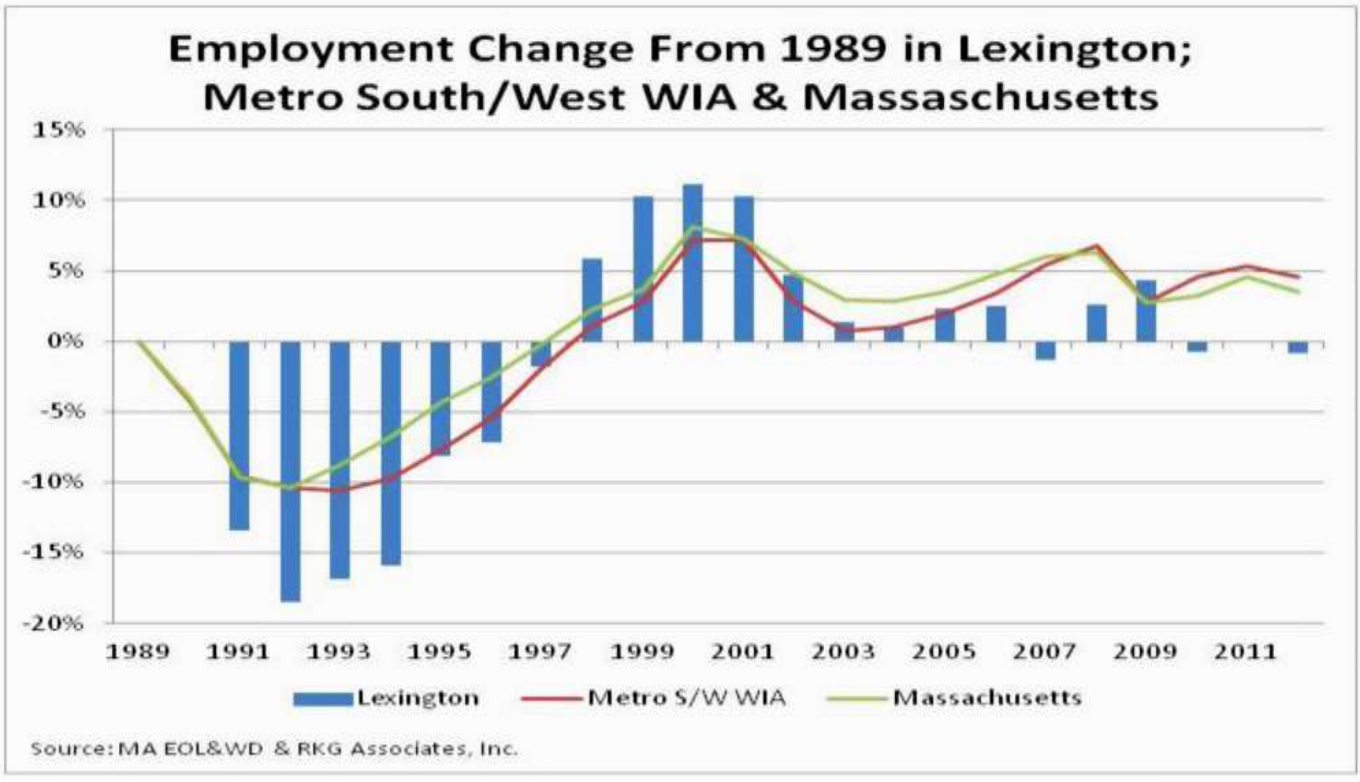


Figure 11 – Local, Regional and Statewide Employment Trends

Table 7 – Town of Lexington Major Employers

Company Name	Address	Range in Employees	NAICS	Industry Subsector
MIT - Lincoln Laboratory	Wood St	1,000-4,999	5417	Scientific Research and Development Services
BAE Systems	Forbes Rd	250-499	3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing
Boston Properties	Hartwell Ave	250-499	5312	Offices of Real Estate Agents and Brokers
Compuware Corp	Maguire Rd # 330	250-499	5416	Management, Scientific, and Technical Consulting Services
IHS GLOBAL INSIGHT USA INC	Hartwell Ave	250-499	5419	Other Professional, Scientific, and Technical Services
Lexington Health Care	Lowell St	250-499	6231	Nursing Care Facilities (Skilled Nursing Facilities
Shire Human Genetic Therapies	Shire Way	250-499	5417	Scientific Research and Development Services
Shire US	Shire Way	250-499	5417	Scientific Research and Development Services
Stride Rite Sourcing Intl Inc	Spring St	250-499	4243	Apparel, Piece Goods, and Notions Merchant Wholesalers
Vista Print USA Inc	Hayden Ave	250-499	3231	Printing and Related Support Activities
Collective Brands Performance	Spring St	250-499	3162	Footwear Manufacturing

Source: MA EOL&WD; INFOGROUP & RKG Associates, Inc.

Table 8 – Town of Lexington: Outflow of Residents & Inflow of Workers (2000)

Residents in Lexington Work in:		Place, County or State	Workers in Lexington Commute From:	
#	%		%	#
3,463	24%	Lexington	16%	3,463
175	1%	Arlington	4%	849
818	6%	Waltham	3%	648
240	2%	Billerica	3%	637
1,761	12%	Cambridge	3%	548
208	1%	Somerville	2%	516
240	2%	Woburn	2%	515
201	1%	Chelmsford	2%	482
546	4%	Burlington	2%	457
489	3%	Bedford	2%	423
2,411	17%	Rest of Middlesex Co.	30%	6,330
476	3%	Essex County	7%	1,402
2,246	16%	Boston/Suffolk Co	6%	1,258
598	4%	Norfolk County	6%	1,248
198	1%	Worcester Co	4%	926
113	1%	New Hampshire	4%	876
120	1%	Other MA Counties	2%	515
179	1%	Other States	2%	330
14,482	100%	Total	100%	21,423

Source: US Census & RKG Associates, Inc.

Table 9 – Town of Lexington: Employment Trends by Major Industry Sectors/Subsectors

AVERAGE EMPLOYMENT BY INDUSTRY SECTORS	Town of Lexington					
	2001	2008	% chg	2011	% chg	2012 [1]
Total, All Industries	21,426	19,931	-7.0%	19,410	-2.6%	19,267
Construction	489	403	-17.6%	242	-40.0%	199
Manufacturing	2,067	2,360	14.2%	2,534	7.4%	2,099
Pharmaceutical & Medicine Manufacturing	N/A	413	--	N/A	--	604
Computer and Electronic Product Mfg	1,122	1,227	9.4%	1,162	-5.3%	524
Trade, Transportation and Utilities	2,123	2,102	-1.0%	1,439	-31.5%	1,338
Information	2,434	1,576	-35.3%	1,162	-26.3%	1,251
Publishing Industries	2,113	1,309	-38.1%	925	-29.3%	999
Financial Activities	876	605	-30.9%	498	-17.7%	489
Professional and Business Services	5,062	7,004	38.4%	6,889	-1.6%	7,043
Architectural and Engineering Services	381	N/A	--	443	--	500
Computer Systems Design and Rel Services	1,463	941	-35.7%	1,043	10.8%	993
Management & Technical Consulting Svc	883	535	-39.4%	755	41.1%	768
Scientific Research and Development Svc	662	1,020	54.1%	3,456	238.8%	3,679
Management of Companies and Enterprises	256	343	34.0%	427	24.5%	427
Administrative and Support Services	890	342	-61.6%	315	-7.9%	239
Education and Health Services	6,220	3,719	-40.2%	4,197	12.9%	4,422
Educational Services	3,723	1,727	-53.6%	1,788	3.5%	1,982
Ambulatory Health Care Services	1,244	883	-29.0%	1,189	34.7%	1,174
Leisure and Hospitality	1,199	1,172	-2.3%	1,345	14.8%	1,285
Other Services	535	633	18.3%	649	2.5%	673
Public Administration	376	348	-7.4%	N/A	--	468

[1] 1st Quarter of 2012

Source: MA EOL&WD & RKG Associates, Inc.

Table 10 – Location Quotient: Region to Massachusetts; Lexington to Region

LOCATION QUOTIENT BY MAJOR INDUSTRY	Lexington to Metro S/W				Metro S/W to Massachusetts			
SECTOR/SUBSECTOR	2001	2008	2011	12 [1]	2001	2008	2011	12 [1]
Construction	0.52	0.45	0.33	0.30	0.95	1.01	0.99	0.97
Manufacturing	0.67	1.13	1.41	1.17	1.21	1.18	1.16	1.17
Pharmaceutical & Medicine Manufacturing	--	3.40	--	3.73	1.36	2.06	2.78	3.02
Computer and Electronic Product Mfg	0.71	1.14	1.33	0.63	2.36	2.54	2.41	2.37
Trade, Transportation and Utilities	0.52	0.58	0.42	0.41	0.99	0.98	0.97	0.95
Information	2.06	1.69	1.29	1.27	1.54	1.59	1.65	1.78
Publishing Industries	3.47	2.58	1.89	1.79	1.86	1.95	1.96	2.23
Financial Activities	0.76	0.56	0.50	0.49	0.77	0.79	0.78	0.80
Professional and Business Services	1.20	1.60	1.60	1.65	1.32	1.45	1.46	1.46
Architectural and Engineering Services	0.97	--	1.28	1.46	1.48	1.87	1.58	1.59
Computer Systems Design and Rel Services	1.87	1.24	1.34	1.27	1.99	2.25	2.15	2.08
Management & Technical Consulting Svc	2.28	1.35	2.18	2.25	1.80	1.72	1.49	1.47
Scientific Research and Development Svc	1.94	2.69	7.67	7.83	1.44	1.32	1.40	1.46
Management of Companies and Enterprises	0.37	0.43	0.54	0.50	1.48	2.10	2.23	2.23
Administrative and Support Services	0.77	0.34	0.29	0.24	1.09	1.04	1.18	1.16
Education and Health Services	1.60	0.91	0.97	1.00	0.82	0.81	0.83	0.82
Educational Services	1.99	0.88	0.89	0.94	0.97	1.00	1.02	1.01
Ambulatory Health Care Services	1.69	1.10	1.35	1.31	0.90	0.90	0.91	0.91
Leisure and Hospitality	0.77	0.69	0.77	0.79	0.84	0.89	0.89	0.89
Other Services	0.78	1.06	1.04	1.08	0.92	0.75	0.75	0.75
Public Administration	0.63	0.64	--	0.85	0.65	0.64	0.69	0.68
[1] 1st Quarter of 2012								
Source: MA EOL&WD & RKG Associates, Inc.								

Table 11 – Massachusetts 10-yr Employment Forecast & Potential Capture in Lexington

	10-yr Massachusetts Employment Projections (2010-2020)			Lexington Potential Capture [1]	
Industry Sector	2010	2020	Change	Low	High
Total, All Industries	3,036,378	3,540,832	504,454	2,778	4,378
Construction	104,291	120,452	16,161	28	52
Manufacturing	254,018	289,234	35,216	187	351
Pharmaceutical & Medicine Manufacturing	8,537	11,180	2,643	114	181
Computer and Electronic Product Mfg	59,763	63,701	3,938	36	77
Trade, Transportation and Utilities	531,316	537,258	5,942	14	21
Information	83,702	87,597	3,895	50	81
Publishing Industries	40,147	38,750	(1,397)	(59)	(31)
Financial Activities	205,809	306,864	101,055	241	387
Professional and Business Services	448,587	570,917	122,330	1,264	1,795
Architectural and Engineering Services	31,889	42,213	10,324	98	147
Computer Systems Design and Rel Services	55,907	74,008	18,100	291	440
Management & Technical Consulting Svc	34,447	45,599	11,152	159	299
Scientific Research and Development Svc	47,725	63,176	15,451	284	1,078
Management of Companies and Enterprises	57,553	65,816	8,263	29	60
Administrative and Support Services	140,455	175,042	34,587	59	191
Education and Health Services	832,023	996,730	164,707	748	1,415
Educational Services	321,753	366,405	44,652	242	292
Ambulatory Health Care Services	148,170	182,330	34,160	209	341
Leisure and Hospitality	306,279	332,760	26,481	100	113
Other Services	132,820	170,564	37,744	178	186
Public Administration	137,533	128,456	(9,077)	(32)	(23)
[1] Range in capture rate dependent on low & high percentage of statewide employment by sector;					
Source: ME EOLWD & RKG Associates, Inc.					